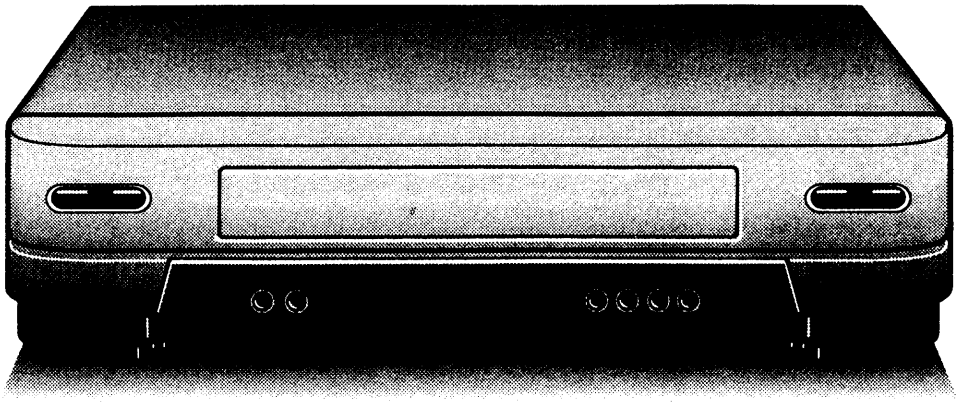
SANYO

FILE NO.

Service Manual

Video Cassette Recorder

VHR-335E (U.K.)
335IR (Ireland)
330SP (Spain)



VHS
PAL

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CIRCUIT DIAGRAMS

Please see other materials with Reference No. given in table below.

Materials	Model No.	Reference No.
Mechanism Manual	P90 Mechanism '92 Midi Mid-Mount Mechanism	WM-530599 MS 531206

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List Do not deviate from the resistance, wattage and voltage ratings shown.

NOTE: 1. Parts order must contain Model Number, Part Number and Description.
2. N.S.P.: Not available as service parts.

TP1L/E, IR, TP1/SP 143 142 01, 10, 11

REFERENCE No. SM531210

1. DISASSEMBLY

1-1. REMOVAL OF CABINET, MECHANISM UNIT AND MAIN BOARD

REMOVING THE CABINET PARTS (Fig. 1.1.1)

1. Remove the cabinet and bottom cover by removing the four screws (A) and five screws (B).
2. Remove the front panel by removing the locks of the clamps (C) using a screwdriver, etc. and slightly rotating the bottom part in the direction of the arrow.

Note: Electrical adjustments for the this model can be performed with only the cabinet removed.

REMOVING THE MECHANISM MAIN UNIT (Fig. 1.1.2)

After removing the cabinet parts:

1. Remove the two screws (D), and then remove the bracket.
2. Remove the 29-wire flat cable from the MC-2 board, and then remove the 8-wire flat cable from the video pre-amp unit.
3. Remove the mechanism main unit by removing the two screws (E) and four screws (F).
   Remove, as well, the two screws (F) at the cassette tray side by pressing the tray lock lever in the direction of the arrow to remove the lock and pushing the cassette tray backwards.

REMOVING THE CP-1 BOARD ASSEMBLY (Fig. 1.1.3)

After removing the cabinet parts and mechanism unit:

1. Pull out the TM-1 board assy from CN301 and CN302 while pressing and spreading out the four clamps (G).
2. Remove the holder set to the opening of the chassis, while pressing the clamp in the direction of the arrow.
3. Remove the two red screws (H). Next, remove the CP-1 board assy by lifting it straight up while pressing and spreading out the two clamps (I).

P14C007

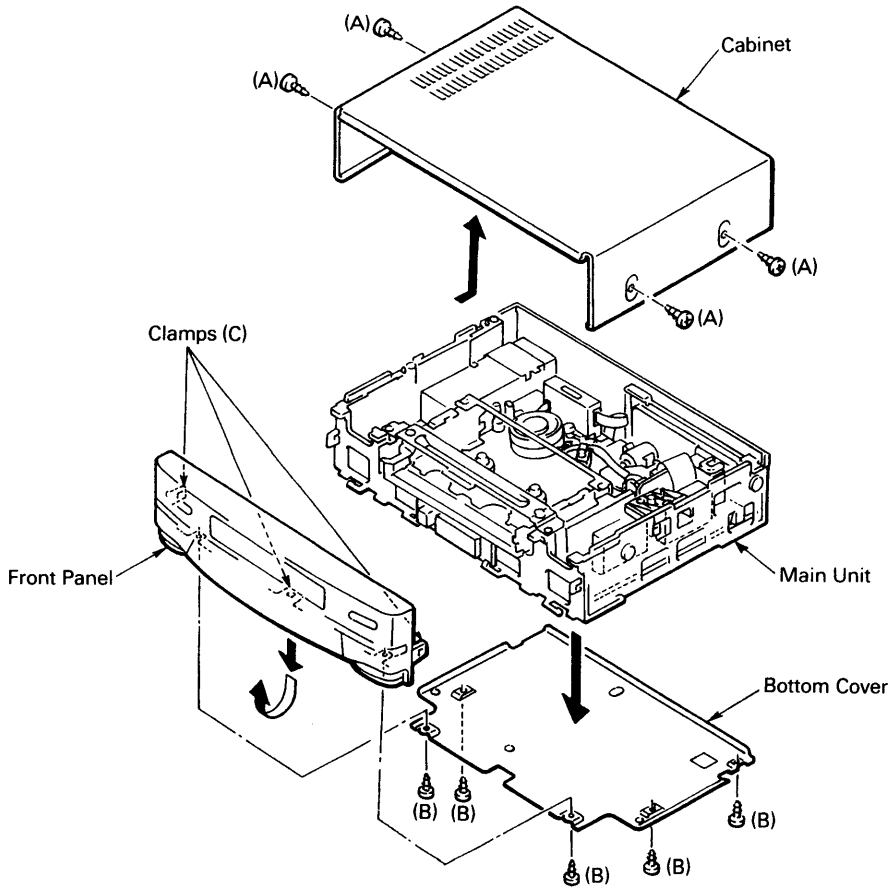


Fig. 1.1.1

P10C011

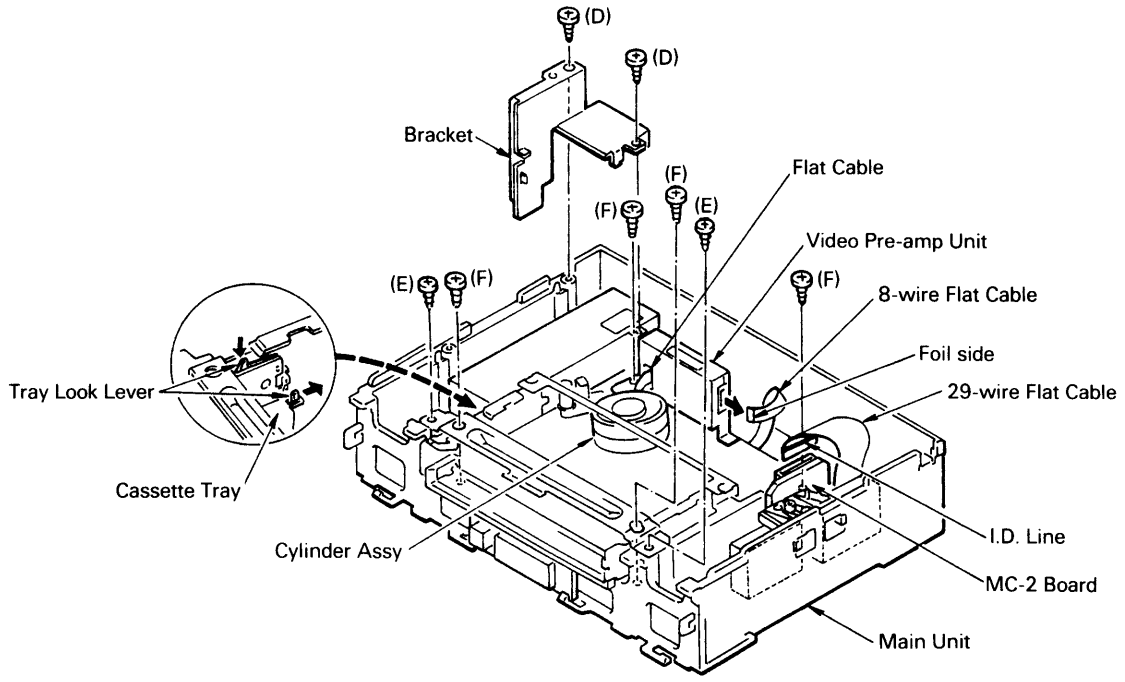


Fig. 1.1.2

P15C012

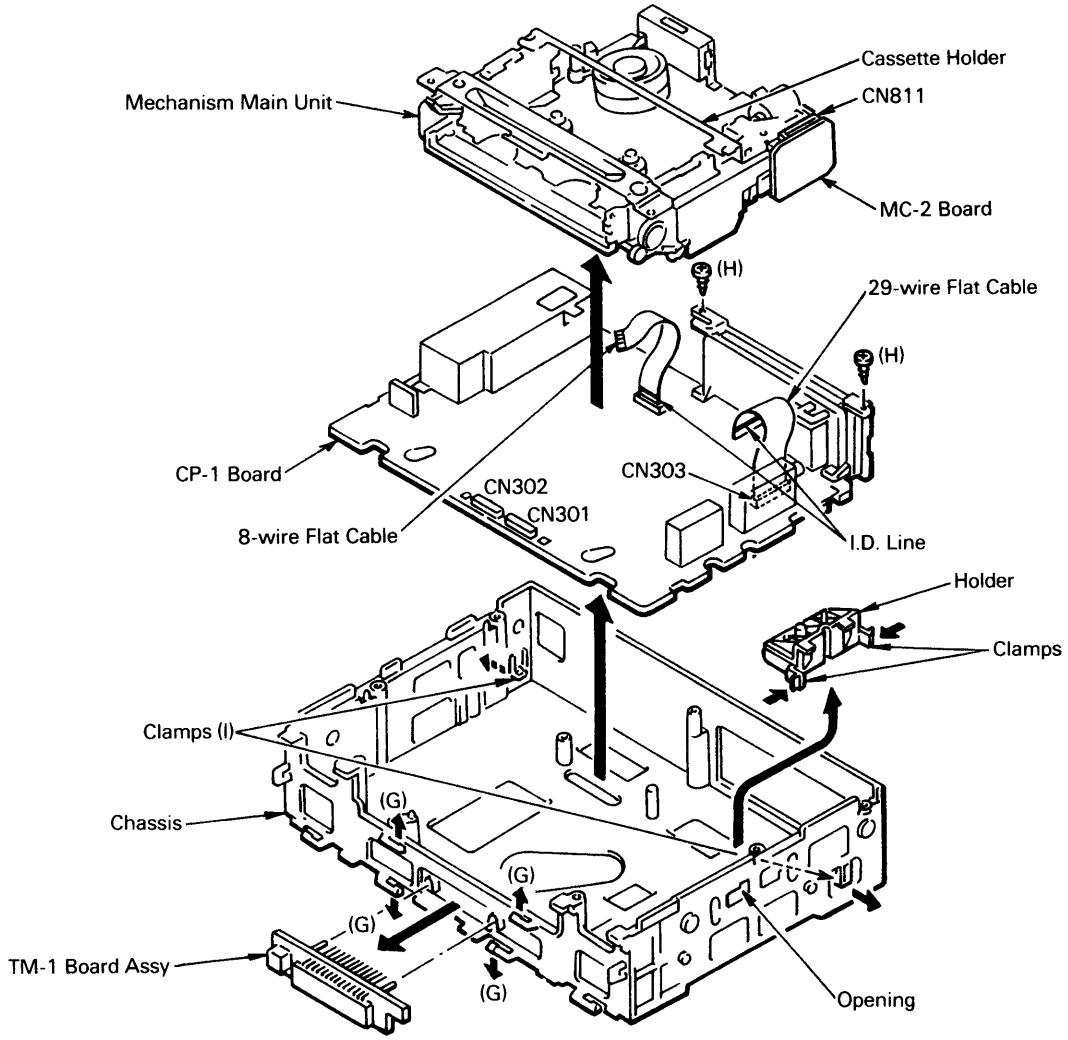


Fig. 1.1.3

TEMPORARILY SETTING UP AND CONNECTING MAIN BOARD ASSEMBLY

The following is an example of how to place and connect the main board not requiring a jig, when repairing the CP-1 board assembly (Fig. 1.1.4)

1. Place the mechanism main unit at the fixed position for the chassis. It is not necessary to tighten the screws.
2. Connect the 29-wire flat cable to the MC-2 board, and the 8-wire flat cable to the video pre-amp unit respectively. Connect the TM-1 board assy if necessary.
3. Place the CP-1 board assy on top of the mechanism main unit along the cassette holder. Insert the tip (J) of the terminal board into the opening (K) at the side of the chassis, as shown in the enlargement diagram to stabilize the CP-1 board assy.

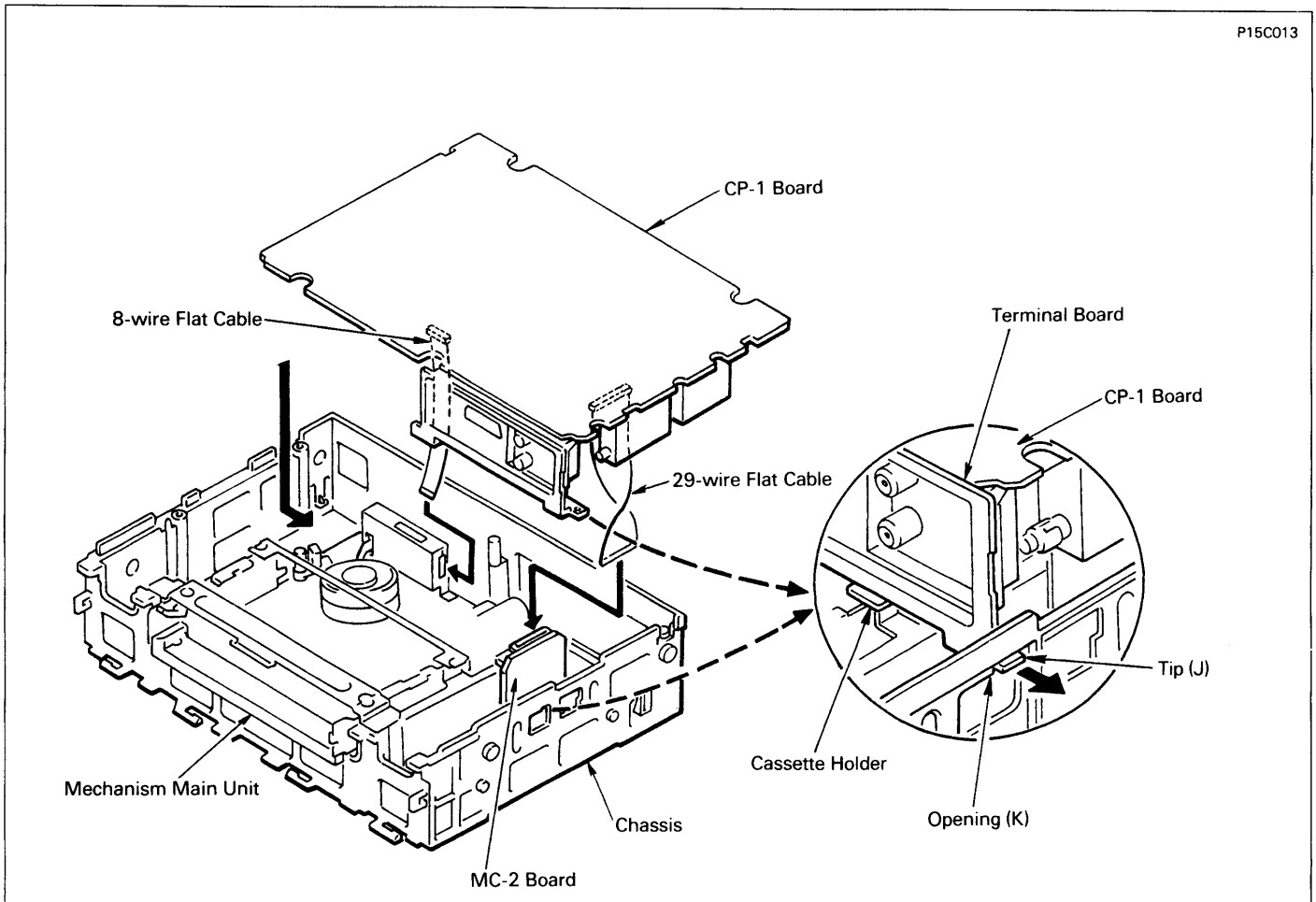


Fig. 1.1.4

1-2. MAIN CIRCUIT BOARD LOCATIONS

L23L114

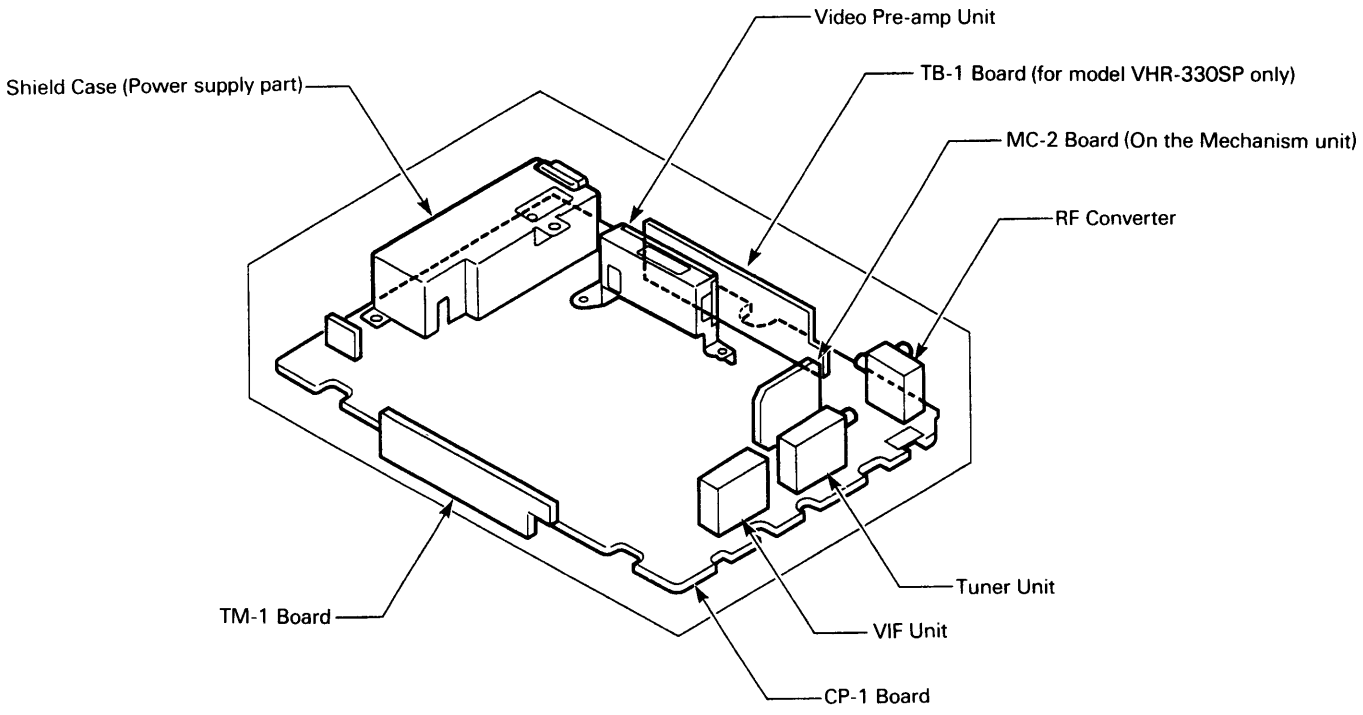


Fig. 1.2.1

2. ELECTRICAL ADJUSTMENT

2-1. PREPARATION

2-1-1. EQUIPMENT

- Color TV monitor
- PAL Color bar generator (with RF and LINE OUTPUT)
- Oscilloscope (dual trace; frequency response: 10MHz or more; probe: 10:1)
- Frequency counter (countable to 10MHz or higher)
- Digital voltmeter
- AC voltmeter
- In/output probes
- Alignment cassette (VHJ-0008) PAL color bar 1KHz
- Alignment cassette (VHJ-0009) PAL monoscope 6KHz
- Alignment cassette (VHJ-0023) PAL monoscope 6KHz, PAL color-bar 1KHz, SECAM color-bar 1KHz, PAL RF sweep, MESECAM color-bar 1KHz, NTSC color-bar 1KHz.
- Relay jig (VHJ-0065) 5-wire cable for pre-amp unit
  Connect the flat cable end from the cylinder assembly to the pre-amp unit using the relay jig to provide simple repairing and adjustment of the pre-amp unit, as shown in Fig. 2.1.1. Further, when adjusting the pre-amp unit, be sure to make contact an end of shield case with bracket of the pre-amp unit to maintain the shield effect.

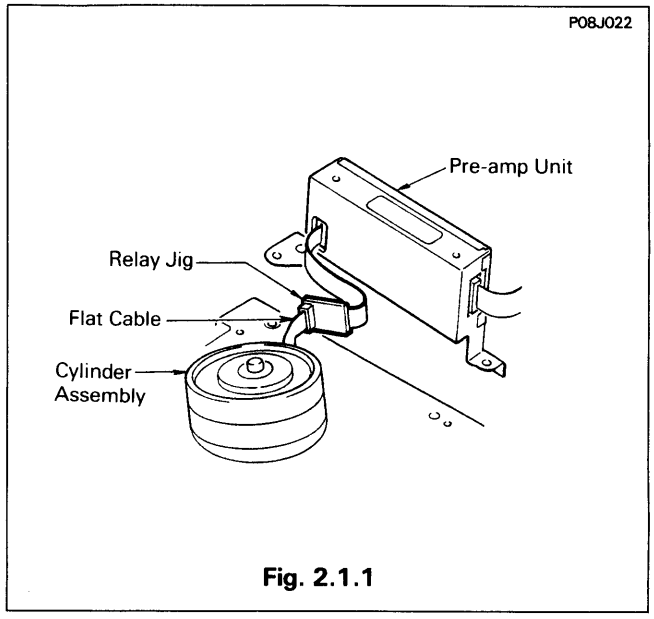


Fig. 2.1.1

2-1-2. SET-UP

Because the RF input signal is used for circuit adjustments, connect the color-bar generator to the ANT IN terminal of the VCR. The RF input signal is processed by the tuner and IF circuit. It is improtant that the video output signal of the IF circuit satisfies the items shown in Fig. 2.1.2.
Connect the oscilloscope to the VIDEO OUTPUT terminal of the video circuit and terminate with a 75Ω load, and then check the video output signal.

- The amplitude of the sync signal should be approximately 0.3 Vp-p.
- The amplitude of the video signal should be approximately 0.7 Vp-p.
- While observing the oscilloscope or TV screen, make fine-tuning adjustments so that the color burst amplitude is approximately 0.3 Vp-p.
- Check to be sure that there is no spike noise in the sync part of the horizontal sync signal.

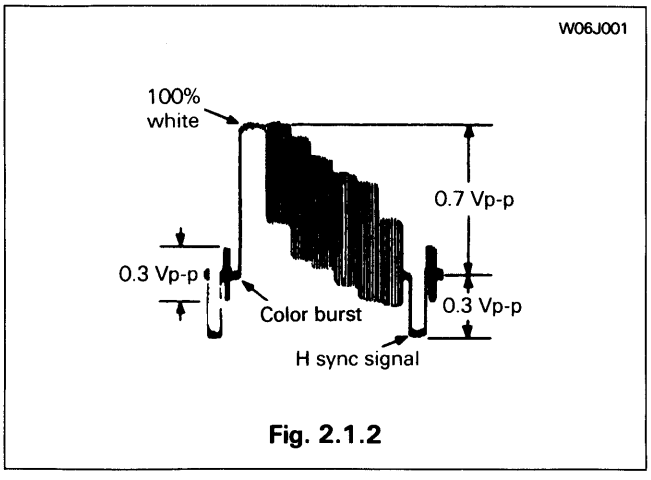
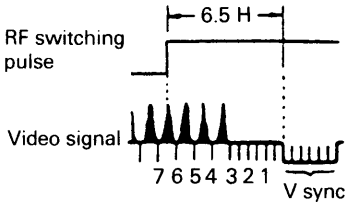


Fig. 2.1.2

2-2. SERVO CIRCUIT ADJUSTMENT

- These adjustments should be carried out upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are carried out after these adjustments, follow the procedures again in Item 1 SWITCHING POSITION ADJ.
- When a cassette tape is loaded, auto-tracking will be set immediately after starting the first playback. As this will deviate the tracking center set, be sure to press the channel buttons (+) or (–) once directly after starting playback to prevent auto-tracking from being set. Press the channel buttons (+) and (–) simultaneously, the tracking control to the center position.
- Unless otherwise specified, all test point and adjustment location on the CP-1 board.

No.	Item	Input	Mode	Point	Location	Remark
1	SWITCHING POSITION	Alignment cassette (VHJ-0009 or VHJ-0023)	SP mode PLAY	VIDEO OUTPUT TP101 RF SW pulse TP351	VR351	W25S001  1. Press the channel buttons (+) and (–) simultaneously, the tracking control to the center position. (Tracking center position display in the indicator panel "T —:— "). 2. Play back the Alignment cassette. 3. Trigger at the rising edge of the RF SW pulse, and adjust VR351 so that the front edge of the V sync signal comes 6.5 ± 0.5H later than rising edge of the RF SW pulse. 4. Confirm that the phase difference between the switching positions of CH-1 and CH-2 is within 0.5H.
2	STILL V-LOCK	Color bar from Color bar generator	SP mode REC ↓ PLAY ↓ STILL	TV screen	CHANNEL (+) (–) buttons (Front panel)	1. Set the SP REC mode and record at the middle of the blank tape. 2. Playback the recorded part, and set the SP STILL mode. 3. Press the channel buttons (+) or (–) until Vjitter (very fine movement of the vertical sync.) is minimized.

P17S080

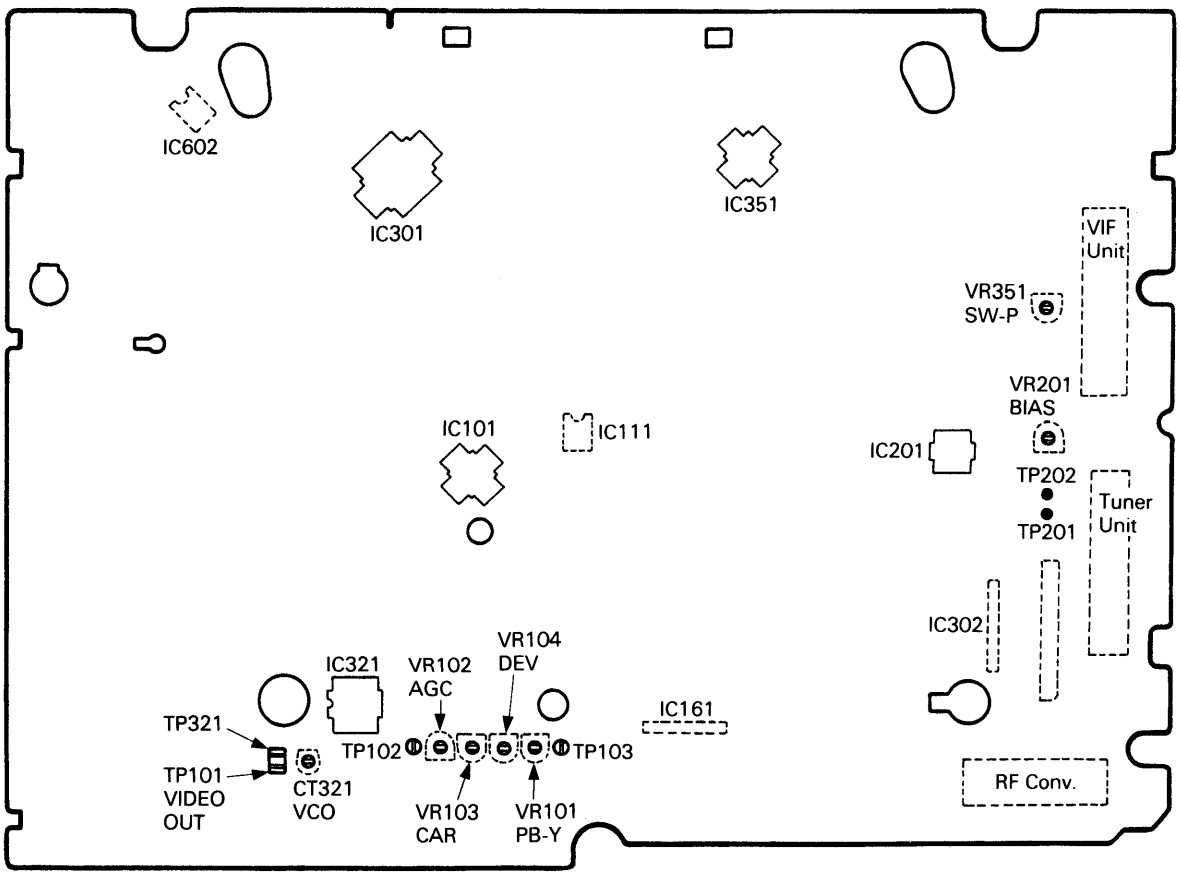
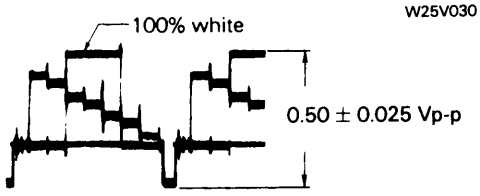
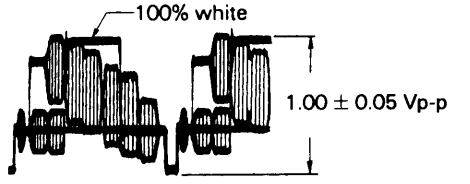
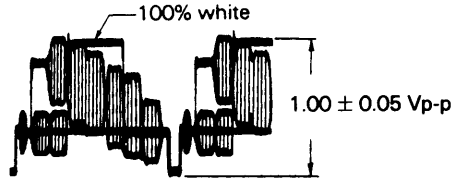
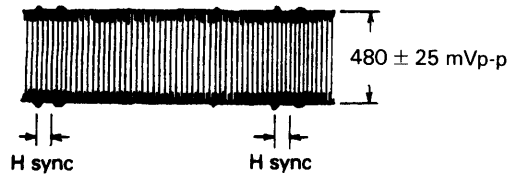


Fig. 2.2.1 CP-1 Board (Foil side)

2-3. VIDEO CIRCUIT ADJUSTMENT

- Use the relay jig mentioned in the 2-1. PREPARATION to provide simple adjustment of the video pre-amp unit.
- Before these adjustments place the unit in the SP mode (for the model VHR-335E and VHR-335IR).
- Unless otherwise specified, all test point and adjustment location on the CP-1 board.

No.	Item	Input	Mode	Point	Location	Remark
1	AGC LEVEL	Color bar (100% white level) from Color bar generator	E-E	TP102	VR102	W25V030  1. Terminate VIDEO OUTPUT terminal with a 75 ohms. 2. Adjust VR102 so that the level is 0.50 ± 0.025 Vp-p.
2	PB-Y LEVEL	Alignment cassette (VHJ-0008 or VHJ-0023)	PLAY	VIDEO OUTPUT TP101	VR101	W25V001  1. Terminate VIDEO OUTPUT terminal with a 75 ohms. 2. Adjust VR101 so that the level is 1.00 ± 0.05 Vp-p.
3	CARRIER SET	Color bar (100% white level) from Color bar generator ↓ No-signal	REC	TP103	VR103	1. Input the PAL color bar signal to VIDEO INPUT terminal. 2. Set the channel selector buttons to the "AV" position and put the VCR in the REC mode. 3. After removing the first color bar signal input from the video input terminal, immediately adjust VR103 so that the frequency becomes 3.83 ± 0.05 MHz.
4	DEVIATION	Color bar (100% white level) from Color bar generator	REC (Adjustment) ↓ PLAY (Check)	VIDEO OUTPUT TP101	VR104	W25W001  1. Terminate VIDEO OUTPUT terminal with a 75 ohms. 2. Insert the blank tape to the VCR and record color bar signal. 3. Playback the recorded part, and check that the level is 1.00 ± 0.05 Vp-p. 4. If the adjustment value is not satisfactory, adjust VR104 and repeat step 3.

No.	Item	Input	Mode	Point	Location	Remark
5	Y/C REC CURRENT	Color bar from Color bar generator	REC	TP181 (HOT) Shield case (GND) (Video pre-amp unit)	VR182 (Video pre-amp unit)	W25V028  1. Connect the ground of the oscilloscope to the shield case of video pre-amp. 2. Set the channel selector buttons to the AV position. 3. Adjust VR182 so that the signal level at the sync tip is 480 ± 25 mVp-p.
6	VCO (for OSA)	Color bar from Color bar generator	E-E	TP321	CT321	1. Connect the digital voltmeter to TP321. 2. Adjust CT321 so that the voltage is 2.5 ± 0.3V.

P06V046

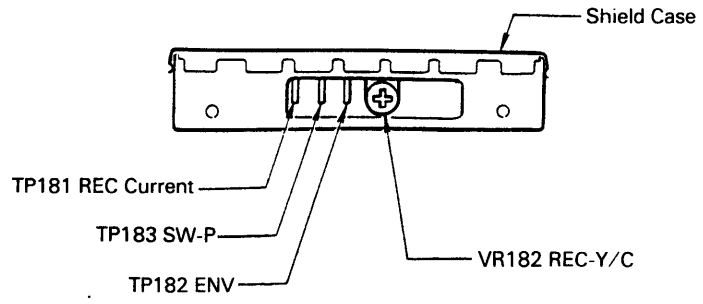


Fig. 2.3.1 Video pre-amp Unit

2-4. AUDIO CIRCUIT ADJUSTMENT

· Unless otherwise specified, all test point and adjustment location on the CP-1 board.

No.	Item	Input	Mode	Point	Location	Remark
1	BIAS LEVEL	No-signal	REC	TP201 (HOT) TP202 (GND)	VR201	1. Set the channel selector buttons to the AV position and place in the SP record mode without a signal. 2. Adjust VR201 so that the level is 23 mVrms. 3. Confirm that the bias frequency is 70 ± 5 KHz.

2-5. TUNER IF CIRCUIT ADJUSTMENT

No.	Item	Input	Mode	Point	Location	Remark
1	RF AGC	TV broadcast	E-E	TV screen	VR611 (VIF unit)	1. Receive the middle electrical field (60 dBμ ~ 80 dBμ) of the TV channel, and slowly turn VR611 from the point where snow-noise is present to the point where it just disappears from the monitor TV. 2. Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel.

P08U007

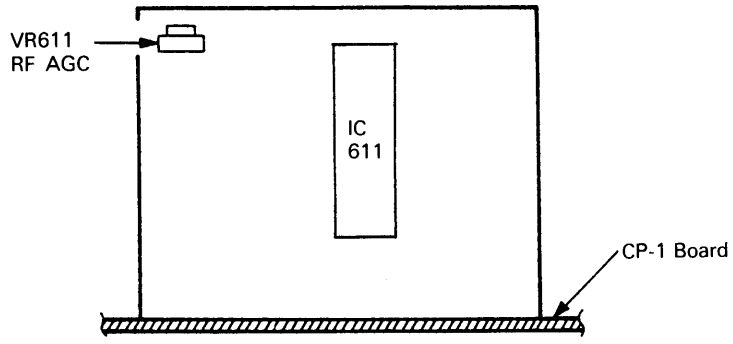


Fig. 2.5.1 VIF Unit (Parts side)

3. TEST POINT FOR TAPE PATH ADJUSTMENT

NOTE: **Test point TP182 and TP183 for tape path adjustment is shown in figure below.**
For adjustment, refer to the Mechanism Service Technical Information (WM-530599 and MS 531206).

P06L029

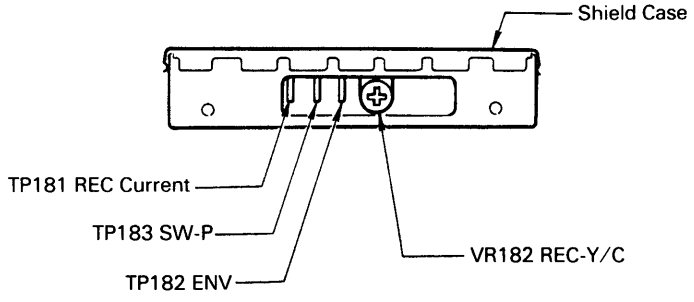
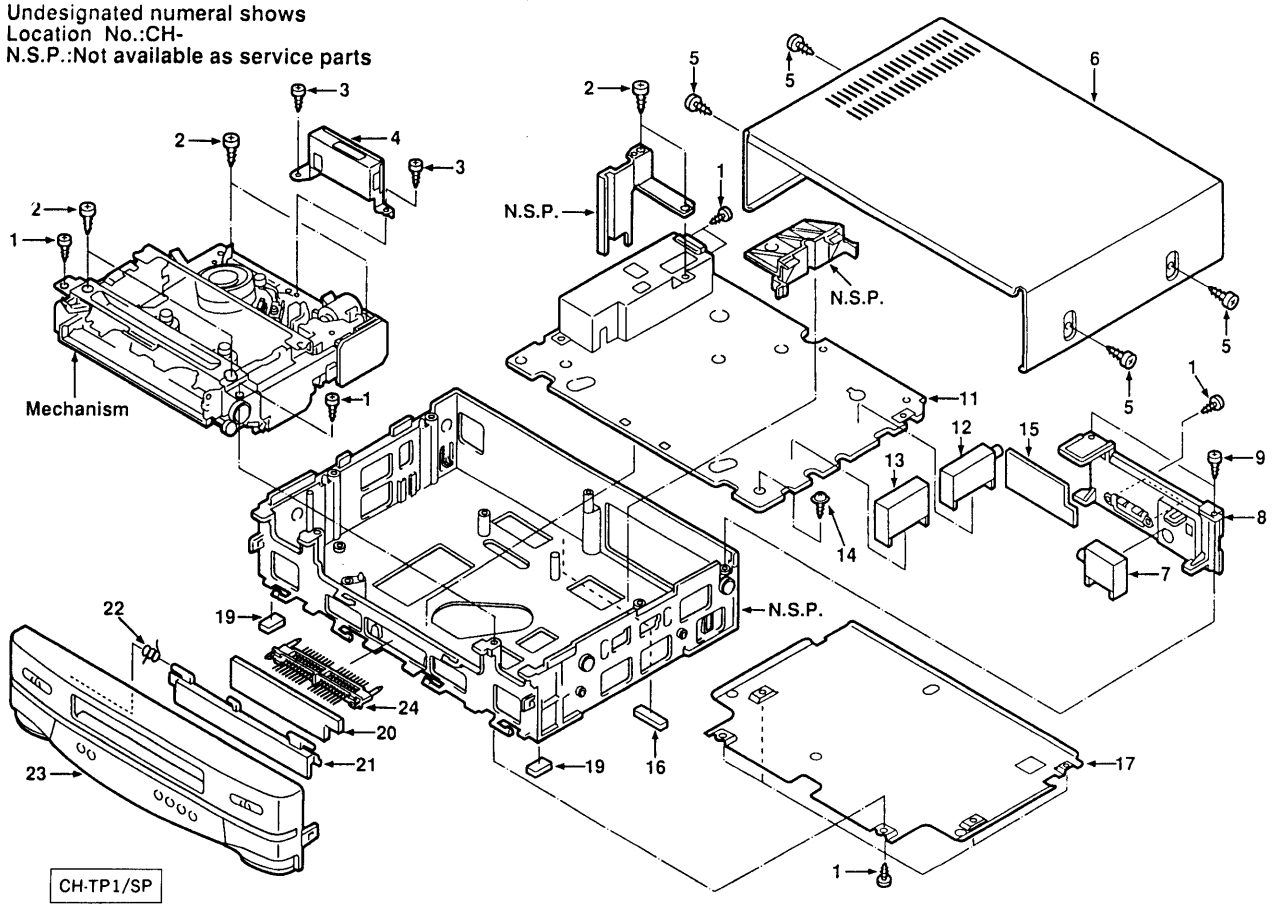


Fig. 3.1 Pre-amp Unit

4. PARTS LIST

LOCATION		PARTS NO.	DESCRIPTION
ACCESSORIES			
		645 001 6462	REMOCON(WITH COVER BATTERY) (EXCEPT VHR-330SP)
OR		645 002 2418	REMOCON(WITH COVER BATTERY) (VHR-330SP ONLY)
		613 145 3227	COVER BATTERY(FOR REMOCON)
		613 144 2726	INSTRUCTION MANUAL(VHR-335E ONLY)
OR		613 144 9107	INSTRUCTION MANUAL(VHR-330SP ONLY)
OR		613 146 3035	INSTRUCTION MANUAL(VHR-335IR ONLY)
		613 132 6132	CABLE,ANT
OR		613 132 5975	CORD
OR		613 096 6773	CABLE,ANT(VHR-330SP ONLY)
OR		613 011 7359	CORD(VHR-330SP ONLY)
	⚠	613 136 6411	CORD,POWER(EXCEPT VHR-330SP)
OR	⚠	613 095 0550	CORD,POWER(VHR-330SP ONLY)
OR	⚠	613 133 2393	CORD,POWER(VHR-330SP ONLY)
**********			
PACKING MATERIALS			
		613 145 0073	CARTON CASE(VHR-335E ONLY)
OR		613 146 4698	CARTON CASE(VHR-330SP ONLY)
OR		613 146 4681	CARTON CASE(VHR-335IR ONLY)
		613 144 5802	CUSHION,FRONT
		613 145 0493	CUSHION,BACK(EXCEPT VHR-330SP)
OR		613 144 5819	CUSHION,BACK(VHR-330SP ONLY)
		613 099 1768	POLYE COVER,INNER-K
**********			
CABINET & CHASSIS PARTS			
CH-1		411 137 0007	SCR L-TPG BIN 3X10
CH-2		411 021 7907	SCR S-TPG BIN 4X12
CH-3		411 027 1701	SCR S-TPG BIN 3X10
CH-4		613 144 7738	COMPL PWB,VP-1(EXCEPT VHR-330SP)
OR		613 146 4988	COMPL PWB,VP-1(VHR-330SP ONLY)
CH-5		412 028 9406	SPECIAL SCREW
CH-6		613 144 4782	COMPL,COVER TOP(VHR-335E ONLY)
OR		613 140 7015	COVER TOP(EXCEPT VHR-335E)
CH-7		613 143 8637	MODULATOR,RF(EXCEPT VHR-330SP)
OR		613 143 8620	MODULATOR,RF(EXCEPT VHR-330SP)
OR		613 143 8644	MODULATOR,RF(VHR-330SP ONLY)
OR		613 143 8651	MODULATOR,RF(VHR-330SP ONLY)
CH-8		613 144 1453	TERMINAL(EXCEPT VHR-330SP)
OR		613 146 0997	TERMINAL(VHR-330SP ONLY)
CH-9		411 021 3800	SCR S-TPG BIN 3X10
CH-11		613 144 9145	COMPL PCB,CP-1-A(VHR-335E ONLY)
OR		613 146 4131	COMPL PCB,CP-1-A(VHR-330SP ONLY)
OR		613 146 4148	COMPL PCB,CP-1-A(VHR-335IR ONLY)
CH-12		613 097 3597	TUNER PACK(VHR-335E ONLY)
OR		613 094 4429	TUNER PACK(VHR-330SP ONLY)
OR		613 096 9873	TUNER PACK(VHR-335IR ONLY)
CH-13		613 135 7884	IF PACK(VHR-335E ONLY)
OR		613 094 4436	IF PACK(VHR-330SP ONLY)
OR		613 096 9897	IF PACK(VHR-335IR ONLY)
CH-14		411 156 1702	SCR S-TPG PAN+FLG 3X8
CH-15		613 145 8413	COMPL PWB,TB-1(VHR-330SP ONLY)
CH-16		613 145 0707	STAND,BACK
CH-17		613 139 2182	COVER BOTTOM
CH-19		613 121 1001	STAND,FELT,FRONT
CH-20		613 144 4461	COMPL PWB,TM-1
CH-21		613 147 3157	DOOR CASSETTE(EXCEPT VHR-330SP)
OR		613 147 3164	DOOR CASSETTE(VHR-330SP ONLY)
CH-22		613 140 7459	SPRING
CH-23		613 144 4775	ASSY,CABINET FRONT(VHR-335E ONLY)
OR		613 146 0447	ASSY,CABINET FRONT(VHR-330SP ONLY)
OR		613 148 1312	ASSY,CABINET FRONT(VHR-335IR ONLY)
CH-24		613 141 1395	PLUG,26P

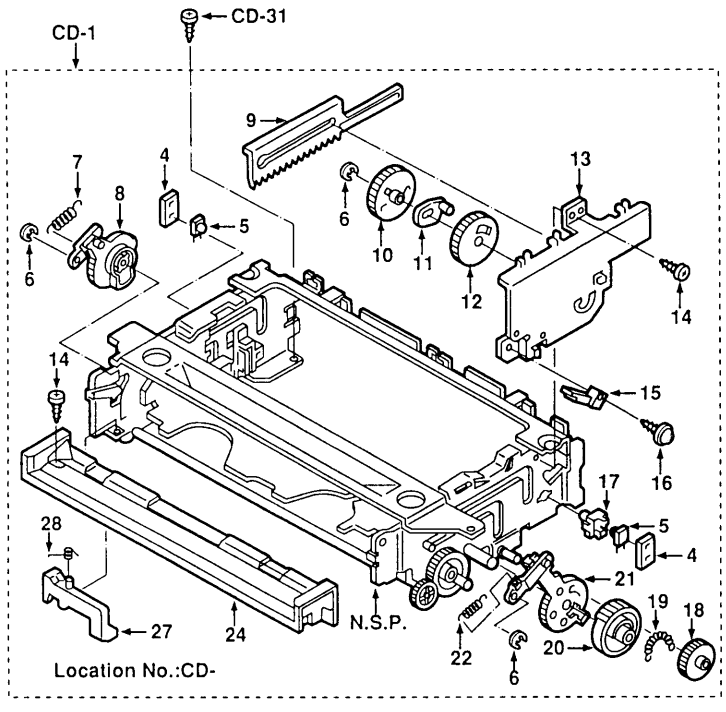
Undesignated numeral shows
Location No.:CH-
N.S.P.:Not available as service parts



MECHANISM PARTS

CB602700
MB0006##

LOCATION	PARTS NO.	DESCRIPTION
MECHANISM PARTS 1		
CD-1	613 142 9581	COMPL,CASSETTE MECHANISM
CD-4	613 022 0585	LID
CD-5	407 098 3201	PHOTO COUPLE PN150SAN
CD-6	411 015 9801	RING E 2.3
CD-7	613 022 1643	SPRING,LINK L
CD-8	613 022 0073	ASSY,GEAR,LEVER L
CD-9	613 022 2695	RACK
CD-10	613 022 2633	GEAR,LOCK
CD-11	613 021 9916	ASSY,LEVER,PINION
CD-12	613 022 2626	GEAR,PINION
CD-13	613 021 9657	ASSY,BRACKET,GEAR
CD-14	411 027 1305	SCR S-TPG BIN 2.6X4
CD-15	613 095 0949	SW,SPECIAL
CD-16	411 106 9208	SCR PAN+SW+W 2X9
CD-17	613 022 0943	HOLDER,TRANSISTOR
CD-18	613 022 2619	GEAR,IDLER
CD-19	613 022 1667	SPRING,GEAR MAIN
CD-20	613 022 2596	GEAR,MAIN
CD-21	613 022 0097	ASSY,GEAR,LEVER R
CD-22	613 022 1674	SPRING,LINK R
CD-24	613 022 4064	BOARD,UNDER
CD-27	613 124 5006	LEVER,SAFETY SW
CD-28	613 125 6149	SPRING,SAFETY SW
CD-31	411 001 8702	SCR BIN 3X6
MA-1	613 100 0391	ASSY,LEVER,TENSION
MA-2	613 085 7996	SPRING,LEVER TENSION
MA-3	613 021 9701	ASSY,HOLDER,BAND
MA-4	411 144 2803	SCR PAN+SW+W 2.6X6
MA-5	411 109 1605	WASHER Y 2.6X6X0.25
MA-6	613 135 7068	ASSY,REEL,SUPPLY
OR	613 135 7549	ASSY,REEL,SUPPLY
MA-7	613 135 7075	ASSY,REEL,TAKE UP
OR	613 143 2963	ASSY,REEL,TAKE UP
MA-8	412 021 5306	SPECIAL WASHER 3.1X6X0.3
MA-8	412 015 8900	SPECIAL WASHER 3.1X6X0.4
OR	412 015 8504	SPECIAL WASHER 3.1X6X0.5
MA-9	411 109 1506	WASHER Y 2.1X6X0.25
OR	411 109 1407	WASHER Y 2.1X5X0.25
MA-10	613 135 7150	GEAR,REEL SUPPLY
OR	613 142 9116	GEAR,REEL SUPPLY
MA-11	412 026 7305	SPECIAL WASHER 2.6X6X0.25
MA-12	613 135 7167	GEAR,REEL TAKE UP
OR	613 142 9109	GEAR,REEL TAKE UP
MA-15	412 042 4302	SPECIAL SCREW 2.6X4
MA-16	613 135 7099	COMPL,IDLER,CLUTCH
MA-17	411 120 1301	WASHER Y 2.1X4X0.25
MA-18	613 135 7082	ASSY,IDLER
MA-19	411 021 3107	SCR S-TPG BIN 2.6X8
MA-20	613 120 9053	COMPL PCB,MC-4
MA-21	407 016 7205	LED LN59
MA-22	613 021 9985	ASSY,SLIDE,ACT PLATE
MA-23	613 142 9086	SLIDE,C BRAKE
MA-24	613 022 1612	SPRING,RETURN SLIDE
MA-25	613 022 1506	SPRING,SUB T
MA-26	613 098 0106	ASSY,BRAKE SUB T
MA-27	613 077 3647	PULLEY,REEL
MA-28	613 022 1490	SPRING,SUB SUPPLY
MA-29	613 022 2374	SLIDE,ACT BRAKE
MA-30	613 084 8871	BRAKE,SUB SUPPLY
MA-31	613 022 0004	ASSY,SLIDE,M PLATE
MA-32	613 080 9216	ASSY,BRAKE,SUPPLY(NECESSARY TO REPLACE WITH LOC.MA-34)
MA-33	613 086 2914	SPRING,MAIN BRAKE
MA-34	613 080 9209	ASSY,BRAKE,TAKE UP(NECESSARY TO REPLACE WITH LOC.MA-32)
MA-35	411 109 3005	WASHER Y 2.6X5X0.5
MA-36	613 022 2015	LEVER,CONT PLATE
MA-37	412 015 9501	SPECIAL WASHER
MA-38	411 021 7907	SCR S-TPG BIN 4X12
MA-39	412 045 4606	SPECIAL WASHER 2.4X6X0.25



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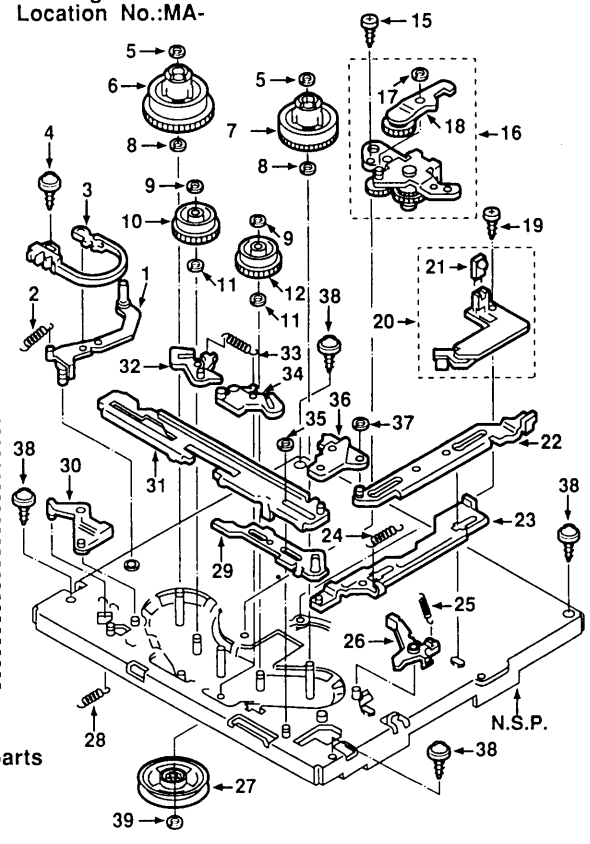
Location No.:MA-



N.S.P.:Not available as service parts

92EP1/MA-1

MECHANISM PARTS 2

LOCATION	PARTS NO.	DESCRIPTION
DR-1	613 137 5789	COMPL,CYLINDER,2N2P-L (EXCEPT VHR-330SP)
OR	613 113 1323	COMPL,CYLINDER,2N2P-V (VHR-330SP ONLY)
OR	613 078 8665	COMPL,CYLINDER,2N2P-V (VHR-330SP ONLY)
DR-2	411 038 1608	SCR PAN+W 3X8
DR-3	613 078 8689	ASSY,CYLINDER,UPR 2N2P-L
OR	613 078 8672	ASSY,CYLINDER,UPR 2N2P-V (VHR-330SP ONLY)
DR-4	613 113 1354	ASSY,CYLINDER,LWR 2AL
OR	613 022 0271	ASSY,CYLINDER,LWR2(VHR-330SP ONLY)
DR-5	613 097 2170	SPACER,MOTOR 0.3T
DR-6	613 088 9072	BASE,CYLINDER
DR-7	411 047 7509	SCR PAN+FLG 3X6
DR-8	411 047 5000	SCR PAN+FLG 2.6X8
DR-9	613 132 3520	STATOR,MOTOR CYL
OR	613 085 7279	STATOR,MOTOR CYL
DR-10	411 044 8301	SCR PAN+SW 2.3X10
OR	411 044 9209	SCR PAN+SW 2.3X8
DR-11	613 022 4019	ROTOR,MOTOR CYL
DR-12	411 044 9001	SCR PAN+SW 2.3X6
MB-1	613 123 4802	SLEEVE
MB-2	613 053 3227	SPECIAL WASHER
MB-3	613 123 4970	TAPE GUIDE
MB-4	411 004 5302	NUT HEX (3)
MB-5	613 123 9418	CAP
MB-6	613 021 9961	ASSY,SLIDE,ACT PINCH
MB-7	613 021 9800	ASSY,LEVER,CAM PINCH
MB-8	411 109 2008	WASHER Y 3.1X8X0.5
MB-9	613 022 1797	SPRING,ACE HEAD
MB-10	613 144 5741	COMPL,BRACKET,HEAD
MB-11	613 110 1692	SLEEVE,ACE HEAD
MB-12	412 015 8207	SPECIAL NUT (M5)
MB-13	411 120 0007	SCR PAN+SW+W 2.6X5
MB-14	613 120 3631	BRACKET,STOPPER
MB-15	613 022 1582	SPRING,SLIDE BRAKE
MB-16	613 094 9240	COMPL,SLIDE,CAM
MB-17	613 022 1575	SPRING,LINK LOCK
MB-18	613 022 2725	DAMPER
MB-19	613 022 2534	GEAR,FRONT LOAD
MB-20	613 094 1206	ASSY,LEVER,FRONT
MB-21	613 134 2910	GEAR,HELICAL FRONT
MB-22	411 046 8002	SCR PAN+SW+W 2.6X6
MB-23	411 023 2801	SCR S-TPG PAN 2.6X6
MB-24	411 023 3303	SCR S-TPG PAN 2.6X8
OR	411 021 3107	SCR S-TPG BIN 2.6X8
MB-28	613 077 3227	HOLDER,WORM
MB-29	613 027 0382	WASHER
MB-30	613 078 8320	ASSY,WORM,FRONT
MB-31	613 117 0599	BRACKET,HOLDER
MB-32	613 093 9159	PLATE,NUT
MB-33	613 093 8374	DAMPER,MOTOR
MB-34	613 077 3616	DAMPER,WORM
MB-35	613 121 9960	ASSY,LOADING MOTOR
MB-36	613 092 9945	DAMPER,MOTOR
MB-37	613 132 8075	COMPL PCB,MC-3
MB-38	613 143 8439	COMPL PWB,MC-2
MB-39	613 110 0374	ROTARY SWITCH
MB-40	411 126 5303	SCR PAN 2.6X13
MB-41	613 092 9921	ASSY,SLIDE,FRONT
MB-42	613 092 5985	SPRING,LEVER LOAD
MB-43	613 092 5992	SPRING,LEVER ACT
MB-44	613 092 5886	HOLDER,WORM
OR	613 138 8628	HOLDER,WORM
MB-45	613 027 0627	WASHER 2.1X6X0.5
MB-46	613 092 9938	ASSY,WORM,LOAD
MB-47	613 022 2985	BELT,LOADING
MB-48	412 033 4106	WASHER SLIT 2.6X5X0.50
MB-49	613 077 3579	GEAR,HELICAL
MB-50	613 102 9293	ASSY,LEVER,REV GUIDE
MB-51	613 022 1568	SPRING,REVIEW LEVER
MB-52	613 022 0158	COMPL,PINCH ROLLER
MB-53	613 147 9951	SPRING,PINCH ROLLER
MB-54	411 109 2107	WASHER Y 3.6X6X0.5
MB-55	613 078 8160	COMPL,LEVER,ACT BRAKE

Note:

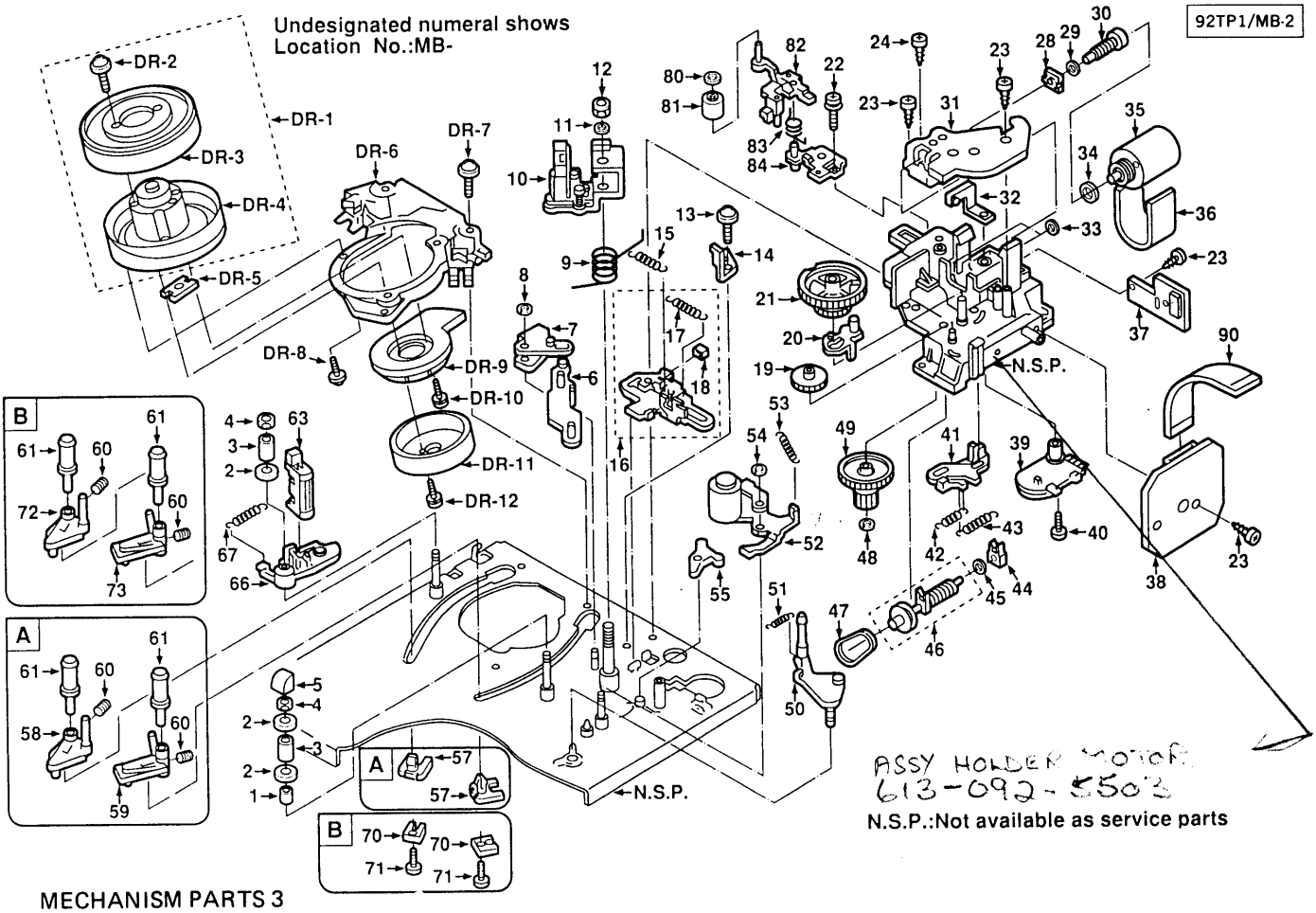
As shown in the figure, the parts supporting the "ASSY, GUIDE, ROLLER" of Location No. MB-61 comes in two types-group A and group B. (Location MB-60 and 61 are the same.) No one part of group A can be replaced by that of group B by itself, but group A and group B can be replaced as a whole as they are interchangeable.

MB-57	613 135 7655	PLATE,BGR
MB-58	613 145 5009	ASSY,MOUNTING,ROLLER S
MB-59	613 145 5016	ASSY,MOUNTING,ROLLER T
MB-60	411 063 0904	SCR SET HEX-SCT 2X3
MB-61	613 022 0233	ASSY,GUIDE,ROLLER
MB-63	645 000 2533	HEAD,FULL ERASE
MB-66	613 136 0532	LEVER,FE HEAD
MB-67	613 022 1698	SPRING,ERASE HEAD
MB-70	613 022 1919	PLATE,GUIDE
MB-71	411 031 1209	SCR BIN 2.6X5
MB-72	613 021 9725	ASSY,BASE,ROLLER S
MB-73	613 021 9732	ASSY,BASE,ROLLER T
MB-80	411 109 1803	WASHER Y 2.6X6X0.5
MB-81	613 119 8562	ASSY,ROLLER,CLEANER
MB-82	613 143 1881	ASSY,LEVER,CLEANER
MB-83	613 119 8593	SPRING
MB-84	613 142 9055	BRACKET,CLEANER
MB-90	613 144 4577	FLEXIBLE FLAT CABLES,CN811-CN303

MECHANISM PARTS 3

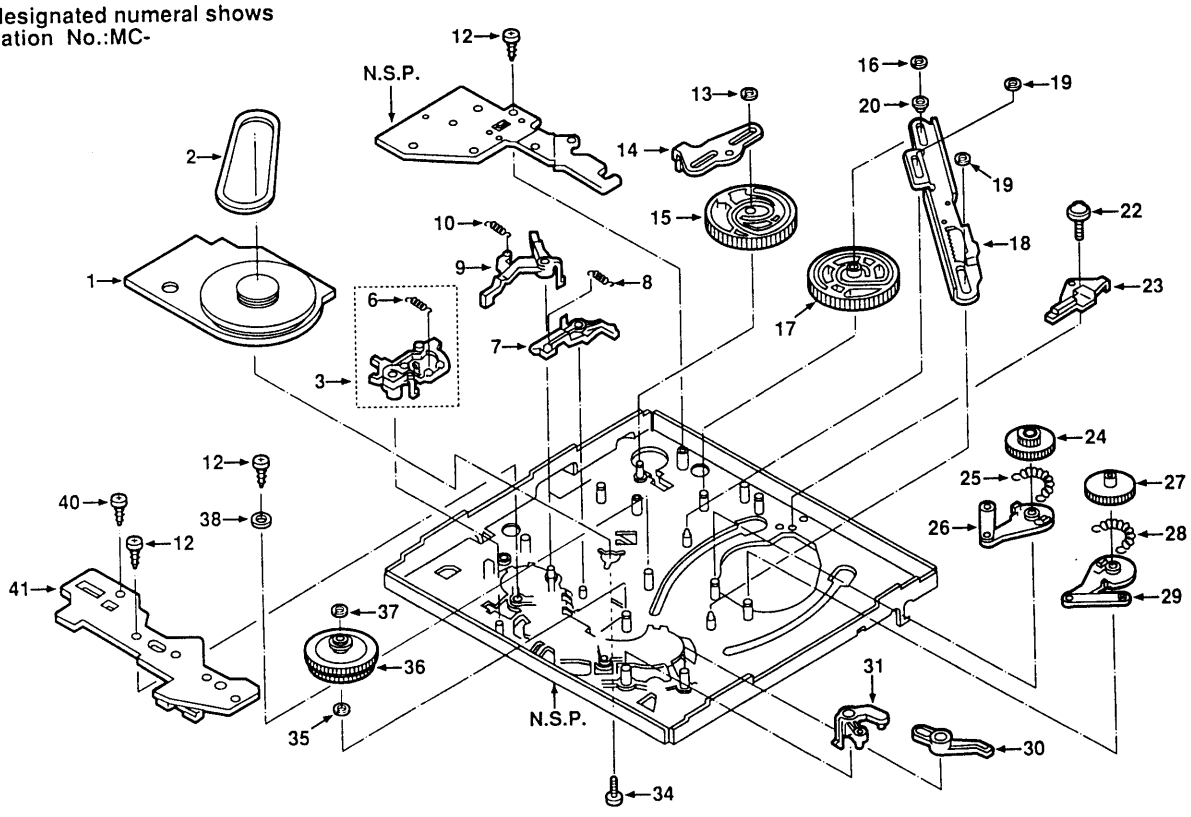
MC-1	645 000 5053	MOTOR,CAPSTAN DC 3W
MC-2	613 022 2978	BELT,REEL DRIVE
MC-3	613 135 4609	COMPL,LEVER,CLUTCH
MC-6	613 022 1520	SPRING,LEVER CLUTCH
MC-7	613 082 3434	LEVER,CHANGE CLUTCH
MC-8	613 022 1711	SPRING,CHANGE CLUTCH
MC-9	613 081 7518	ASSY,BRAKE CAPSTAN
MC-10	613 098 2285	SPRING,CAPSTAN
MC-12	411 021 3107	SCR S-TPG BIN 2.6X8
MC-13	411 109 2008	WASHER Y 3.1X8X0.5
MC-14	613 142 9093	SLIDE,CAM PLATE
MC-15	613 022 2701	CAM,MODE
MC-16	411 109 1902	WASHER Y 3.1X6X0.5
MC-17	613 135 7686	CAM,MAIN
MC-18	613 135 7532	ASSY,RACK,LOAD
MC-19	411 109 1803	WASHER Y 2.6X6X0.5
MC-20	613 135 7648	SPACER,RACK LOAD
MC-22	411 047 6809	SCR PAN+FLG 3X4
MC-23	613 021 9763	ASSY,EARTH,CYL
MC-24	613 135 7662	GEAR,LOAD TAKE UP
MC-25	613 022 1551	SPRING,GEAR LOAD T
MC-26	613 021 9879	ASSY,LEVER,LOAD T
MC-27	613 090 6373	GEAR,LOAD S
MC-28	613 022 1704	SPRING,GEAR LOAD S
MC-29	613 021 9862	ASSY,LEVER,LOAD S
MC-30	613 022 2039	LEVER,RETURN TENSION
MC-31	613 091 3104	ASSY,LEVER CONTROL
MC-34	411 028 6309	SCR S-TPG PAN 2.6X6
MC-35	412 015 8603	SPECIAL WASHER 3.1X6X0.25
MC-36	613 130 9890	ASSY,GEAR,FRICTION
MC-37	412 045 4606	SPECIAL WASHER 2.4X6X0.25
MC-38	411 092 0906	WASHER Z 2.6X10X0.5
MC-40	411 100 0300	SCR S-TPG BIN 2.6X5
MC-41	613 120 9060	COMPL,MC-1

MECHANISM PARTS 2



N.S.P.:Not available as service parts

MECHANISM PARTS 3



N.S.P.:Not available as service parts

ELECTRICAL PARTS

NOTE;

1. Materials of Capacitors and Resistors are abbreviated as follows;

Resistors

MT-FILM	Metal Film Resistor
MT-GLAZE	Metal Glaze Resistor
OXIDE-MT	Oxide Metal Film Resistor

Capacitors

MT-POLYEST	Metallized Polyester Capacitor
MT-COMPO	Metallized Composite Capacitor
TA-SOLID	Tantalum Solid Capacitor
AL-SOLID	Aluminum Solid Capacitor
NP-ELECT	Non-Polarized Electrolytic Capacitor
OS-SOLID	Aluminum Solid Capacitors with Organic Semiconductive Electrolytic Capacitor
DL-ELECT	Double Layered Electrolytic Capacitor

2. Tolerance of Capacitor(10pF over) and Resistor are noted with follow symboles.
   F ····· ±1% G ····· ±2% J ····· ±5% K ····· ±10%
   M ····· ±20% N ····· ±30% Z ····· +80% ~ −20%
3. Capacitors
   U : uF P : pF
4. Inductors
   UH : uH MH : mH
5. N.S.P. : Not available as service parts.

LOCATION	PARTS NO.	DESCRIPTION
COMPL PCB,CP-1-A		
COMPL.NO	613 144 9145	(VHR-335E)
COMPL.NO	613 146 4131	(VHR-330SP)
COMPL.NO	613 146 4148	(VHR-335IR)
(SEMICONDUCTORS)		
Q1002	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
OR	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
Q1003	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
OR	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
Q1004	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
OR	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
Q1006	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
OR	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
Q1007	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
OR	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
Q1011	405 063 9708	TR DTC144EL-TL2
Q1012	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
OR	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
Q1013	405 123 6500	TR UN6213-(TA)
OR	405 063 9708	TR DTC144EL-TL2
Q1014	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
OR	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
Q1101	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
OR	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
Q1102	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
OR	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
Q1151	405 123 6401	TR UN6212-(TA)
OR	405 063 9906	TR DTC124EL-TL2
Q1152	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
OR	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
Q1301	405 123 6609	TR UN6113-(TA)(EXCEPT VHR-330SP)
OR	405 063 9104	TR DTA144EL-TL2(EXCEPT VHR-330SP)
Q1312	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
OR	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
Q1313	405 123 6500	TR UN6213-(TA)
OR	405 063 9708	TR DTC144EL-TL2
Q1601	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1806	TR 2SA933S-T93-R
Q1653	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
OR	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
Q1654	405 123 6708	TR 2SB1320A-Q-(TA)
OR	405 123 6807	TR 2SB1320A-R-(TA)
OR	405 064 0100	TR 2SA1561-TL2-Q
OR	405 064 0209	TR 2SA1561-TL2-R
Q2001	405 024 9709	TR 2SD734-E-AA
OR	405 024 9907	TR 2SD734-F-AA
Q2002	405 063 9708	TR DTC144EL-TL2
OR	405 123 6500	TR UN6213-(TA)
Q2003	405 003 7702	TR 2SA1346-AC
OR	405 000 1208	TR DTA124ES-DCTP
Q3001	405 018 2808	TR 2SC3402-AC
Q3002	405 018 2808	TR 2SC3402-AC
Q3201	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 093 0607	TR KSC2785-Y
Q3202	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
OR	405 093 0607	TR KSC2785-Y
Q3203	405 004 4007	TR 2SA608-E-SPA-AC

LOCATION	PARTS NO.	DESCRIPTION
Q3203	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q3503	405 063 9708	TR DTC144EL-TL2(EXCEPT VHR-330SP)
OR	405 123 6500	TR UN6213-(TA)(EXCEPT VHR-330SP)
Q3504	405 063 9708	TR DTC144EL-TL2
OR	405 123 6500	TR UN6213-(TA)
Q3553	405 057 6201	TR 2SC4038-Q-TL2
OR	405 057 6409	TR 2SC4038-R-TL2
OR	405 123 7002	TR 2SD1991A-Q-(TA)
OR	405 123 7101	TR 2SD1991A-R-(TA)
Q5101	405 088 9103	TR 2SA1703-S-AN
OR	405 108 7003	TR 2SB1322A-S(TA)
OR	405 108 6907	TR 2SB1322A-R(TA)
Q5102	405 089 2103	TR 2SC4483-S-AN
OR	405 107 4201	TR 2SD1994-S (TA)
OR	405 107 4102	TR 2SD1994-R (TA)
Q5103	405 018 2808	TR 2SC3402-AC
Q6001	405 026 9004	TR 2SK222-D-AA
OR	405 026 9103	TR 2SK222-E-AA
OR	405 114 7806	TR 2SK1104-(TA) P
OR	405 114 7905	TR 2SK1104-(TA) Q
OR	405 114 8001	TR 2SK1104-(TA) R
Q6002	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q6004	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6611	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q6621	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6901	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6902	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q6903	405 019 2005	TR 2SC536-E-SPA-AC
OR	405 019 2807	TR 2SC536-F-SPA-AC
OR	405 093 0607	TR KSC2785-Y
OR	405 011 8401	TR 2SC1740S-DCTP-Q
OR	405 011 8500	TR 2SC1740S-DCTP-R
Q6904	405 063 9708	TR DTC144EL-TL2
OR	405 123 6500	TR UN6213-(TA)
Q6921	405 084 8209	TR 2SC2960-F-SPA-AC
OR	405 084 8308	TR 2SC2960-G-SPA-AC

LOCATION	PARTS NO.	DESCRIPTION
(INTEGRATED CIRCUITS)		
IC101	409 303 6700	IC LA7345M
OR	409 303 6710	IC LA7345M-TRM
IC111	409 297 6205	IC LC89925
IC161	409 003 4501	IC BA7021(EXCEPT VHR-330SP)
OR	409 120 3401	IC LA7221(EXCEPT VHR-330SP)
IC201	409 307 6805	IC LA7285M-TR-M
OR	409 262 2409	IC LA7285M
IC301	410 169 6308	IC LC866648V-5356(EXCEPT VHR-330SP)
OR	*** *** ****	IC(VHR-330SP ONLY)
IC302	409 114 4803	IC LB1641
IC303	409 243 4101	IC MN1380-L
IC321	410 169 1006	IC LC74760M-8783-TR-M
OR	410 166 2808	IC LC74760M-8783
IC351	409 306 0408	IC XRU2890BK
OR	409 306 0507	IC BU2890BK
IC501	409 297 7509	IC STR-M6549
IC511	409 067 7203	IC L5431-AA
IC512	409 297 7400	IC PQ12SZ11
IC601	409 026 8203	IC L5631
OR	409 057 5103	IC UPC574J
IC602	409 247 7702	IC ST24C02AB1(EXCEPT VHR-330SP)
OR	409 283 6905	IC LE24C04S1(VHR-330SP ONLY)
IC691	409 019 6209	IC LA7910(EXCEPT VHR-335E)
(DIODES)		
D1003	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1004	407 007 9904	DIODE GMA01-BT(EXCEPT VHR-330SP)
OR	407 012 4406	DIODE 1SS133-T-77(EXCEPT VHR-330SP)
D1007	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D1301	407 007 9904	DIODE GMA01-BT(EXCEPT VHR-330SP)
OR	407 012 4406	DIODE 1SS133-T-77(EXCEPT VHR-330SP)
D1601	407 007 9904	DIODE GMA01-BT(EXCEPT VHR-330SP)
OR	407 012 4406	DIODE 1SS133-T-77(EXCEPT VHR-330SP)
D1602	407 007 9904	DIODE GMA01-BT(EXCEPT VHR-330SP)
OR	407 012 4406	DIODE 1SS133-T-77(EXCEPT VHR-330SP)
D1611	407 070 7104	ZENER DIODE GZS5.6X-BT (EXCEPT VHR-330SP)
OR	407 053 6704	ZENER DIODE MTZ5.6B-T-77 (EXCEPT VHR-330SP)
D1671	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D3001	407 150 7703	DIODE RB441Q T-77
D3002	407 051 6904	ZENER DIODE GZS5.6Y-BT
OR	407 099 5303	ZENER DIODE MTZJ5.6B-T-77
D3003	407 070 8101	ZENER DIODE GZS8.2Y-BT
OR	407 063 9504	ZENER DIODE MTZJ8.2B-T-77
D3102	407 012 4406	DIODE 1SS133-T-77(VHR-335E ONLY)
OR	407 007 9904	DIODE GMA01-BT(VHR-335E ONLY)
D3103	407 012 4406	DIODE 1SS133-T-77(VHR-330SP ONLY)
OR	407 007 9904	DIODE GMA01-BT(VHR-330SP ONLY)
D3106	407 012 4406	DIODE 1SS133-T-77(EXCEPT VHR-330SP)
OR	407 007 9904	DIODE GMA01-BT(EXCEPT VHR-330SP)
D3107	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3112	407 012 4406	DIODE 1SS133-T-77(VHR-330SP ONLY)
OR	407 007 9904	DIODE GMA01-BT(VHR-330SP ONLY)
D3121	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3122	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3123	407 012 4406	DIODE 1SS133-T-77

LOCATION	PARTS NO.	DESCRIPTION
D3123	407 007 9904	DIODE GMA01-BT
D3201	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3202	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D3502	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D5001	407 134 8900	DIODE DBC10G
D5003	407 091 6704	DIODE AP01C-V0
D5004	407 078 2705	DIODE 1SS244-T-77
D5011 ⚠	407 151 3308	PHOTO COUPLE PC120FB
D5101	407 129 2005	DIODE RL2Z-LF-B1
D5102	407 158 1505	DIODE ERC30-02L38
D5103	407 100 6909	DIODE AG01-V2
OR	407 091 6902	DIODE ERA38-04-V5
D5104	407 078 2705	DIODE 1SS244-T-77
D5105	407 100 6909	DIODE AG01-V2
OR	407 091 6902	DIODE ERA38-04-V5
D5109	407 099 5105	ZENER DIODE MTZJ4.7B-T-77
D5110	407 120 5807	DIODE AK04-V2
D5111	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D5112	407 063 8705	ZENER DIODE MTZJ5.1C-T-77
D5113	407 004 9709	DIODE DSK10C-BT
OR	407 005 8701	DIODE ERA15-02-V5
D5114	407 078 2705	DIODE 1SS244-T-77
D6601	407 070 7104	ZENER DIODE GZS5.6X-BT
OR	407 053 6704	ZENER DIODE MTZ5.6B-T-77
D6901	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D6902	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
D6903	407 012 4406	DIODE 1SS133-T-77
OR	407 007 9904	DIODE GMA01-BT
(CRYSTAL DEVICES)		
X1001	645 000 6012	OSC,CRYSTAL 4.433619MHZ
OR	645 000 6029	OSC,CRYSTAL 4.433619MHZ
OR	645 002 4436	OSC,CRYSTAL 4.433619MHZ
X3001	613 132 8242	RESONATOR,CERAMIC13.92MHZ
X3002	613 109 0972	OSC,CRYSTAL 32KHZ
OR	613 123 6387	OSC,CRYSTAL 32.768KHZ
X3201	613 002 8709	CRYSTAL 17.734475MHZ
OR	613 127 1555	OSC,CRYSTAL 17.734475MHZ
(VARIABLE RESISTORS)		
VR101	613 120 8438	VR,SEMI 22KB
OR	613 120 8582	VR,SEMI 22KB
VR102	613 120 8421	VR,SEMI 2.2KB
OR	613 120 8575	VR,SEMI 2.2KB
VR103	613 120 8506	VR,SEMI 4.7KB
OR	613 120 8650	VR,SEMI 4.7KB
VR104	613 079 2532	VR,SEMI 10KB
OR	613 120 8544	VR,SEMI 10KB
VR201	613 097 7915	VR,SEMI 100KB(EXCEPT VHR-330SP)
OR	613 001 9097	SEMI VR 100KB(EXCEPT VHR-330SP)
VR351	613 097 7953	VR,SEMI 220KB
OR	613 001 9110	SEMI VR 220KB
(TRIMMER)		
CT321	613 002 6378	TRIMMER

LOCATION	PARTS NO.	DESCRIPTION
(INDUCTORS)		
L1001	613 014 1156	COIL,INDUCTOR 39UHJ
OR	613 014 4676	HF CHOKE 39UHJ
L1002	613 014 0739	COIL,INDUCTOR 1.0UHM
OR	613 014 4256	HF CHOKE 1.0UHK
L1004	613 014 0999	COIL,INDUCTOR 150UHK
OR	613 014 4515	HF CHOKE 150UHK
L1005	613 014 1019	COIL,INDUCTOR 220UHK
OR	613 014 4539	HF CHOKE 220UHK
L1007	613 014 0791	COIL,INDUCTOR 3.3UHK
OR	613 014 4317	HF CHOKE 3.3UHK
L1008	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
L1009	613 014 0777	COIL,INDUCTOR 2.2UHM
OR	613 014 4294	HF CHOKE 2.2UHK
L1010	613 014 0906	COIL,INDUCTOR 27UHK
OR	613 014 4423	HF CHOKE 27UHK
L1012	613 014 1156	COIL,INDUCTOR 39UHJ
OR	613 014 4676	HF CHOKE 39UHJ
L1013	613 014 0913	COIL,INDUCTOR 33UHK
OR	613 014 4430	HF CHOKE 33UHK
L1081	613 014 0975	COIL,INDUCTOR 100UHK
OR	613 014 4492	HF CHOKE 100UHK
L1101	613 014 0968	COIL,INDUCTOR 82UHK
OR	613 014 4485	HF CHOKE 82UHK
L2002	613 014 3532	HF CHOKE 10000UHJ
L2003	613 015 6297	COIL,INDUCTOR 560UHJ
L3201	613 014 1057	COIL,INDUCTOR 5.6UHJ
OR	613 014 4577	HF CHOKE 5.6UHJ
L3202	613 014 0913	COIL,INDUCTOR 33UHK
OR	613 014 4430	HF CHOKE 33UHK
L5002 ⚠	613 140 6438	COIL,LINE FILTER
OR ⚠	645 002 1886	LINE FILTER
L5101	613 110 4198	COIL,INDUCTOR 10UH K
OR	645 002 4122	INDUCTOR 10U K
L5102	613 145 4262	COIL,INDUCTOR 22UH K
OR	645 002 4962	INDUCTOR 22U K
L6002	613 014 0852	COIL,INDUCTOR 10UHK (EXCEPT VHR-335E)
OR	613 014 4379	HF CHOKE 10UHK(EXCEPT VHR-335E)
L6003	613 014 0852	COIL,INDUCTOR 10UHK (EXCEPT VHR-335E)
OR	613 014 4379	HF CHOKE 10UHK(EXCEPT VHR-335E)
L6004	613 014 0852	COIL,INDUCTOR 10UHK
OR	613 014 4379	HF CHOKE 10UHK
L6005	613 014 0852	COIL,INDUCTOR 10UHK (EXCEPT VHR-335E)
OR	613 014 4379	HF CHOKE 10UHK(EXCEPT VHR-335E)
L6601	613 014 0739	COIL,INDUCTOR 1.0UHM
OR	613 014 4256	HF CHOKE 1.0UHK
L6603	613 014 0852	COIL,INDUCTOR 10UHK
OR	613 014 4379	HF CHOKE 10UHK
L6621	613 014 0944	COIL,INDUCTOR 56UHK (EXCEPT VHR-330SP)
OR	613 014 4461	HF CHOKE 56UHK(EXCEPT VHR-330SP)
OR	613 014 0975	COIL,INDUCTOR 100UHK (VHR-330SP ONLY)
OR	613 014 4492	HF CHOKE 100UHK(VHR-330SP ONLY)
(TRANSFORMERS)		
T2001	613 094 3378	TRANS,OSC 70KHZ
OR	613 016 2205	OSC COIL 70KHZ
T5001 ⚠	645 000 9730	TRANS,POWER,PULSE

LOCATION	PARTS NO.	DESCRIPTION
T6901	613 109 0958	TRANS,IF
OR	613 109 0965	TRANS,IF
(DELAY LINES)		
DL101	645 000 5992	DELAY LINE(COMB)
OR	645 000 6005	DELAY LINE(COMB)
(CAPACITORS)		
C1002	403 072 4202	CERAMIC 270P J 50V
C1003	403 030 6309	CERAMIC 68P J 50V
C1004	403 022 7703	CERAMIC 33P J 50V
C1005	403 139 2608	ELECT 0.47U M 50V
C1006	403 025 7304	CERAMIC 4.7P K 50V
C1007	403 073 2702	CERAMIC 390P J 50V
C1008	403 017 9705	CERAMIC 22P J 50V (EXCEPT VHR-330SP)
C1009	403 025 7304	CERAMIC 4.7P K 50V
C1010	403 075 3103	CERAMIC 82P J 50V
C1011	403 139 2707	ELECT 1U M 50V
C1012	403 139 1502	ELECT 10U M 16V
C1013	403 139 2608	ELECT 0.47U M 50V
C1014	403 001 1906	CERAMIC 0.01U M 16V
C1015	403 120 9005	CERAMIC 0.022U J 16V
C1016	403 120 9005	CERAMIC 0.022U J 16V
C1021	403 073 2702	CERAMIC 390P J 50V
C1022	403 217 5507	CERAMIC 0.1U J 16V
C1023	403 030 6309	CERAMIC 68P J 50V
C1027	403 001 1906	CERAMIC 0.01U M 16V
C1029	403 139 1502	ELECT 10U M 16V
C1030	403 191 8709	ELECT 1U M 50V
C1031	403 191 8709	ELECT 1U M 50V
C1032	403 120 9609	CERAMIC 0.047U J 16V
C1033	403 120 9005	CERAMIC 0.022U J 16V
C1034	403 075 2601	CERAMIC 75P J 50V
C1036	403 191 8709	ELECT 1U M 50V
C1037	403 191 8808	ELECT 2.2U M 50V
C1038	403 120 9005	CERAMIC 0.022U J 16V
C1039	403 120 9609	CERAMIC 0.047U J 16V
C1040	403 001 1906	CERAMIC 0.01U M 16V
C1041	403 189 2405	ELECT 10U M 16V
C1042	403 120 9609	CERAMIC 0.047U J 16V
C1043	403 222 1105	CERAMIC 0.047U Z 16V
C1044	403 163 7907	ELECT 47U M 6.3V
C1045	403 001 1906	CERAMIC 0.01U M 16V
C1046	403 139 1502	ELECT 10U M 16V
C1047	403 139 1502	ELECT 10U M 16V
C1048	403 001 1906	CERAMIC 0.01U M 16V
C1049	403 022 7703	CERAMIC 33P J 50V
C1050	403 001 1906	CERAMIC 0.01U M 16V
C1051	403 073 6205	CERAMIC 470P J 50V
C1052	403 001 1906	CERAMIC 0.01U M 16V
C1053	403 001 1906	CERAMIC 0.01U M 16V
C1054	403 139 1007	ELECT 47U M 6.3V
C1058	403 019 9703	CERAMIC 27P J 50V
C1060	403 022 7703	CERAMIC 33P J 50V
C1061	403 022 7703	CERAMIC 33P J 50V
C1062	403 071 1509	CERAMIC 180P J 50V
C1081	403 074 8703	CERAMIC 680P J 50V
C1101	403 139 1007	ELECT 47U M 6.3V
C1102	403 001 1906	CERAMIC 0.01U M 16V
C1105	403 026 2209	CERAMIC 47P J 50V
C1106	403 025 7304	CERAMIC 4.7P K 50V
C1107	403 026 2209	CERAMIC 47P J 50V
C1109	403 001 1906	CERAMIC 0.01U M 16V
C1110	403 139 2707	ELECT 1U M 50V
C1311	403 120 9005	CERAMIC 0.022U J 16V
C1601	403 121 9509	CERAMIC 0.1U Z 50V
C1602	403 223 9308	ELECT 470U M 6.3V (EXCEPT VHR-330SP)
C1611	403 193 8608	ELECT 0.47U M 50V (EXCEPT VHR-330SP)
C1613	403 121 9509	CERAMIC 0.1U Z 50V (EXCEPT VHR-330SP)
C1614	403 139 1502	ELECT 10U M 16V (EXCEPT VHR-330SP)
C2002	403 075 4506	CERAMIC 820P K 50V
C2004	403 139 0901	ELECT 33U M 6.3V
C2005	403 150 0201	CERAMIC 0.018U K 16V
C2009	403 150 6500	ELECT 22U M 16V
C2010	403 139 1809	ELECT 47U M 16V
C2013	403 002 8201	CERAMIC 0.015U J 25V
C2016	403 191 8600	ELECT 4.7U M 25V
C2017	403 139 1502	ELECT 10U M 16V
C2019	403 139 1809	ELECT 47U M 16V
C2020	403 071 6207	CERAMIC 220P K 50V
C2021	403 081 7409	POLYPRO 0.033U J 100V
C2022	403 129 0409	CERAMIC 0.01U K 16V
C2024	403 129 0409	CERAMIC 0.01U K 16V
C2071	403 001 3306	CERAMIC 1200P M 16V (EXCEPT VHR-330SP)
C2072	403 191 8808	ELECT 2.2U M 50V (EXCEPT VHR-330SP)
C2073	403 003 4707	CERAMIC 0.027U J 25V (EXCEPT VHR-330SP)
C2091	403 121 9509	CERAMIC 0.1U Z 50V
C2092	403 069 1207	CERAMIC 1000P K 50V
C2101	403 121 9509	CERAMIC 0.1U Z 50V
C2102	403 121 9509	CERAMIC 0.1U Z 50V (EXCEPT VHR-330SP)
C2152	403 069 1207	CERAMIC 1000P K 50V (EXCEPT VHR-330SP)
C2153	403 001 8905	CERAMIC 6800P M 16V (EXCEPT VHR-330SP)
C3001	403 191 8808	ELECT 2.2U M 50V
C3002	403 001 1906	CERAMIC 0.01U M 16V
C3003	403 121 9509	CERAMIC 0.1U Z 50V
C3004	403 001 1906	CERAMIC 0.01U M 16V
C3005	403 001 1906	CERAMIC 0.01U M 16V
C3008	403 189 2405	ELECT 10U M 16V
C3009	403 001 1906	CERAMIC 0.01U M 16V
C3010	403 009 1700	CERAMIC 10P J 50V
C3011	403 017 0108	CERAMIC 20P J 50V
C3012	403 001 1906	CERAMIC 0.01U M 16V
C3013	403 001 1906	CERAMIC 0.01U M 16V
C3016	403 001 1906	CERAMIC 0.01U M 16V
C3017	403 223 9308	ELECT 470U M 6.3V
C3020	403 072 8200	CERAMIC 330P K 50V
C3022	403 265 4408	DL-ELECT 0.1F Z 5.5V
C3023	403 010 7708	CERAMIC 12P J 50V
C3201	403 012 6006	CERAMIC 15P J 50V
C3202	403 012 6006	CERAMIC 15P J 50V
C3203	403 139 2707	ELECT 1U M 50V
C3204	403 009 1700	CERAMIC 10P J 50V
C3205	403 019 0403	CERAM 24P J 50V
C3206	403 138 2500	CERAMIC 0.022U K 16V
C3207	403 119 7104	CERAMIC 6800P K 16V
C3208	403 086 2805	NP-ELECT 1U M 50V
C3210	403 022 7703	CERAMIC 33P J 50V
C3211	403 191 8709	ELECT 1U M 50V
C3212	403 068 9402	CERAMIC 100P K 50V
C3213	403 163 7907	ELECT 47U M 6.3V
C3214	403 189 2405	ELECT 10U M 16V
C3216	403 139 1007	ELECT 47U M 6.3V
C3217	403 001 1906	CERAMIC 0.01U M 16V
C3501	403 129 9709	CERAMIC 0.015U K 16V

LOCATION	PARTS NO.	DESCRIPTION
C3502	403 001 8806	CERAMIC 6800P K 16V
C3503	403 129 9709	CERAMIC 0.015U K 16V
C3505	403 150 6500	ELECT 22U M 16V
C3506	403 001 8806	CERAMIC 6800P K 16V
C3508	403 150 6500	ELECT 22U M 16V
C3511	403 071 6207	CERAMIC 220P K 50V
C3512	403 184 9201	MT-POLYEST 0.039U J 50V
C3513	403 119 6701	CERAMIC 0.068U K 16V
C3514	403 057 2902	POLYESTER 0.1U K 50V
C3515	403 059 6007	POLYESTER 0.022U K 50V
C3516	403 001 5003	CERAMIC 2200P K 16V
C3517	403 001 3801	CERAMIC 1500P K 16V
C3522	403 069 1207	CERAMIC 1000P K 50V
C3523	403 191 8709	ELECT 1U M 50V
C3524	403 001 1906	CERAMIC 0.01U M 16V
C3525	403 193 8608	ELECT 0.47U M 50V
C3526	403 138 2500	CERAMIC 0.022U K 16V
C3530	403 163 7907	ELECT 47U M 6.3V
C3536	403 193 7601	ELECT 220U M 6.3V
C3551	403 175 0903	MT-POLYEST 0.12U J 50V
C3552	403 028 3402	CERAMIC 56P J 50V
C3553	403 191 8709	ELECT 1U M 50V
C3554	403 070 7205	CERAMIC 150P J 50V
C3556	403 069 1207	CERAMIC 1000P K 50V
C3558	403 149 0700	ELECT 33U M 16V
C5001 ⚠	404 055 4905	MT-POLYEST 0.068U M 250V
C5002 ⚠	404 055 4905	MT-POLYEST 0.068U M 250V
C5003	403 238 1809	ELECT 47U M 400V
C5004	★403 243 9203★	ELECT 2.2U M 250V
C5005	403 255 8409	CERAMIC 39P J 1K
C5006	403 121 3101	ELECT 10U M 35V
C5020 ⚠	404 032 8506	CERAMIC 1000P M 400V
C5022 ⚠	404 032 8506	CERAMIC 1000P M 400V
C5101	403 204 6401	ELECT 1000U M 16V
C5102	403 148 0305	ELECT 470U M 16V
C5103	403 076 2006	CERAMIC 330P K 500V
C5104	403 243 8909	ELECT 1000U M 10V
C5105	403 147 9507	ELECT 470U M 6.3V
C5106	403 154 8302	ELECT 47U M 50V
C5107	403 155 3009	ELECT 47U M 25V
C5108	403 155 5409	ELECT 220U M 6.3V
C5110	403 184 9300	MT-POLYEST 0.047U J 50V
C5111	403 121 9509	CERAMIC 0.1U Z 50V
C5112	403 126 4509	ELECT 100U M 16V
C5113	403 001 1906	CERAMIC 0.01U M 16V
C5114	403 135 4002	ELECT 47U M 6.3V
C6001	403 121 9509	CERAMIC 0.1U Z 50V
C6002	403 191 8600	ELECT 4.7U M 25V (EXCEPT VHR-335E)
C6003	403 191 8709	ELECT 1U M 50V (EXCEPT VHR-335E)
C6004	403 168 6103	MT-POLYEST 0.1U J 50V
C6005	403 191 8600	ELECT 4.7U M 25V (EXCEPT VHR-335E)
C6006	403 248 1608	ELECT 47U M 16V
C6007	403 222 1105	CERAMIC 0.047U Z 16V
C6009	403 193 8905	ELECT 22U M 50V
C6010	403 121 9509	CERAMIC 0.1U Z 50V
C6017	403 073 7004	CERAMIC 470P K 50V
C6601	403 189 2405	ELECT 10U M 16V
C6602	403 189 2405	ELECT 10U M 16V
C6611	403 150 6500	ELECT 22U M 16V
C6621	403 022 7703	CERAMIC 33P J 50V
C6622	403 022 7703	CERAMIC 33P J 50V (EXCEPT VHR-330SP)
OR	403 024 1501	CERAMIC 39P J 50V (VHR-330SP ONLY)

LOCATION	PARTS NO.	DESCRIPTION
C6901	403 121 9509	CERAMIC 0.1U Z 50V
C6902	403 189 2405	ELECT 10U M 16V
C6903	403 003 3700	CERAMIC 0.022U Z 25V
C6904	403 258 3807	ELECT 0.22U M 50V
C6921	403 121 9509	CERAMIC 0.1U Z 50V
C6924	403 168 6202	MT-POLYEST 0.33U J 50V
C6925	403 184 9805	MT-POLYEST 0.22U J 50V
C6926	403 233 0302	ELECT 100U M 16V
C6927	403 071 2001	CERAMIC 180P K 50V
(RESISTORS)		
R1001	401 018 3708	CARBON 3.3K JA 1/4W
R1002	401 013 5202	CARBON 1.2K JA 1/4W
R1003	401 019 1802	CARBON 3.9K JA 1/4W
R1004	401 012 5609	CARBON 1K JA 1/4W
R1005	401 020 0702	CARBON 470 JA 1/4W
R1006	401 023 1607	CARBON 820 JA 1/4W
R1007	401 012 5609	CARBON 1K JA 1/4W
R1008	401 017 1705	CARBON 2.7K JA 1/4W
R1009	401 022 1806	CARBON 680 JA 1/4W
R1010	401 016 3700	CARBON 2.2K JA 1/4W (EXCEPT VHR-330SP)
R1012	401 012 5609	CARBON 1K JA 1/4W
R1013	401 012 5609	CARBON 1K JA 1/4W
R1014	401 016 3700	CARBON 2.2K JA 1/4W
R1018	401 012 5609	CARBON 1K JA 1/4W
R1019	401 016 4707	CARBON 22K JA 1/4W
R1020	401 016 4707	CARBON 22K JA 1/4W
R1021	401 012 5609	CARBON 1K JA 1/4W
R1022	401 012 5609	CARBON 1K JA 1/4W
R1023	401 022 1806	CARBON 680 JA 1/4W (EXCEPT VHR-330SP)
OR	401 012 5609	CARBON 1K JA 1/4W (VHR-330SP ONLY)
R1026	401 012 9201	CARBON 1M JA 1/4W
R1027	401 023 2703	CARBON 8.2K JA 1/4W
R1028	401 015 2605	CARBON 1.8K JA 1/4W
R1029	401 012 5609	CARBON 1K JA 1/4W
R1032	401 016 4707	CARBON 22K JA 1/4W
R1033	401 012 5609	CARBON 1K JA 1/4W
R1035	401 020 0702	CARBON 470 JA 1/4W
R1036	401 014 4006	CARBON 1.5K JA 1/4W
R1038	401 012 5609	CARBON 1K JA 1/4W
R1040	401 014 2804	CARBON 150 JA 1/4W
R1044	401 013 6308	CARBON 12K JA 1/4W
R1046	401 018 4804	CARBON 33K JA 1/4W
R1047	401 023 2703	CARBON 8.2K JA 1/4W
R1048	401 020 1907	CARBON 4.7K JA 1/4W
R1049	401 013 6308	CARBON 12K JA 1/4W
R1052	401 012 5609	CARBON 1K JA 1/4W
R1053	401 018 2701	CARBON 330 JA 1/4W
R1054	401 018 3708	CARBON 3.3K JA 1/4W
R1058	401 017 1705	CARBON 2.7K JA 1/4W
R1059	401 015 2605	CARBON 1.8K JA 1/4W
R1063	401 016 4707	CARBON 22K JA 1/4W
R1071	401 017 1705	CARBON 2.7K JA 1/4W
R1072	401 015 2605	CARBON 1.8K JA 1/4W
R1104	401 021 1807	CARBON 560 JA 1/4W
R1105	401 012 5609	CARBON 1K JA 1/4W
R1106	401 012 5609	CARBON 1K JA 1/4W
R1107	401 016 3700	CARBON 2.2K JA 1/4W
R1153	401 020 1907	CARBON 4.7K JA 1/4W
R1154	401 020 1907	CARBON 4.7K JA 1/4W
R1601	401 021 1807	CARBON 560 JA 1/4W
R1602	401 022 6702	CARBON 75 JA 1/4W (EXCEPT VHR-330SP)
R1603	401 015 0403	CARBON 18 JA 1/4W (EXCEPT VHR-330SP)

LOCATION	PARTS NO.	DESCRIPTION
R1603	401 012 3308	CARBON 10 JA 1/4W (VHR-330SP ONLY)
R1611	401 012 5609	CARBON 1K JA 1/4W (EXCEPT VHR-330SP)
R1614	401 012 5609	CARBON 1K JA 1/4W (EXCEPT VHR-330SP)
R1615	401 022 6702	CARBON 75 JA 1/4W (EXCEPT VHR-330SP)
R1651	401 023 2703	CARBON 8.2K JA 1/4W
R1652	401 013 6308	CARBON 12K JA 1/4W
R1653	401 021 0602	CARBON 56 JA 1/4W
R1656	401 012 6903	CARBON 10K JA 1/4W
R1657	401 021 2903	CARBON 5.6K JA 1/4W
R1658	401 021 2903	CARBON 5.6K JA 1/4W
R1659	401 019 1802	CARBON 3.9K JA 1/4W
R1671	401 012 4404	CARBON 100 JA 1/4W
R1673	401 012 6903	CARBON 10K JA 1/4W (EXCEPT VHR-330SP)
R1691	401 023 1607	CARBON 820 JA 1/4W (VHR-330SP ONLY)
R1692	401 023 1607	CARBON 820 JA 1/4W (VHR-330SP ONLY)
R2001	401 012 4404	CARBON 100 JA 1/4W
R2002	401 017 1705	CARBON 2.7K JA 1/4W
R2003	401 020 7404	CARBON 51 JA 1/4W
R2004	401 019 3905	CARBON 390K JA 1/4W
R2005	401 021 8905	CARBON 6.2K JA 1/4W
R2009	401 023 4509	CARBON 820K JA 1/4W
R2010	401 012 6903	CARBON 10K JA 1/4W
R2011	401 014 5102	CARBON 15K JA 1/4W
R2012	401 018 4804	CARBON 33K JA 1/4W
R2013	401 022 3008	CARBON 6.8K JA 1/4W
R2014	401 013 5202	CARBON 1.2K JA 1/4W
R2018	401 016 4707	CARBON 22K JA 1/4W
R2021	401 017 6106	CARBON 3.3 JA 1/4W
R2022	401 019 9501	CARBON 47 JA 1/4W
R2023	401 014 5102	CARBON 15K JA 1/4W
R2024	401 019 6104	CARBON 4.7 JA 1/4W
R2071	401 022 0700	CARBON 68 JA 1/4W (EXCEPT VHR-330SP)
R2091	401 017 1705	CARBON 2.7K JA 1/4W
R2093	401 107 4005	MT-FILM 27K FD 1/4W (VHR-330SP ONLY)
R2101	401 019 2908	CARBON 39K JA 1/4W
R2102	401 017 2702	CARBON 27K JA 1/4W
R2103	401 019 2908	CARBON 39K JA 1/4W (EXCEPT VHR-330SP)
R2104	401 016 4707	CARBON 22K JA 1/4W (EXCEPT VHR-330SP)
R2105	401 020 7800	CARBON 510 JA 1/4W (EXCEPT VHR-330SP)
R2106	401 023 1607	CARBON 820 JA 1/4W (EXCEPT VHR-330SP)
R2107	401 021 1807	CARBON 560 JA 1/4W (EXCEPT VHR-330SP)
R2108	401 017 1705	CARBON 2.7K JA 1/4W (EXCEPT VHR-330SP)
R2109	401 017 1705	CARBON 2.7K JA 1/4W (EXCEPT VHR-330SP)
R2110	401 012 5609	CARBON 1K JA 1/4W
R2111	401 022 7105	CARBON 750 JA 1/4W
R3001	402 067 7402	FUSIBLE RES 3.3 JA 1/2W
R3002	401 022 7105	CARBON 750 JA 1/4W
R3004	401 014 4006	CARBON 1.5K JA 1/4W
R3008	401 020 1907	CARBON 4.7K JA 1/4W
R3009	401 020 1907	CARBON 4.7K JA 1/4W
R3010	401 020 1907	CARBON 4.7K JA 1/4W
R3011	401 020 2805	CARBON 47K JA 1/4W
R3012	401 020 1907	CARBON 4.7K JA 1/4W
R3013	401 020 1907	CARBON 4.7K JA 1/4W
R3014	401 016 0402	CARBON 200K JA 1/4W
R3015	401 016 0402	CARBON 200K JA 1/4W
R3018	401 012 6903	CARBON 10K JA 1/4W
R3022	401 012 8006	CARBON 100K JA 1/4W
R3023	401 012 5609	CARBON 1K JA 1/4W
R3024	401 012 5609	CARBON 1K JA 1/4W
R3025	401 012 5609	CARBON 1K JA 1/4W
R3026	401 012 5609	CARBON 1K JA 1/4W
R3032	401 018 4804	CARBON 33K JA 1/4W
R3034	401 013 6308	CARBON 12K JA 1/4W
R3035	401 012 6903	CARBON 10K JA 1/4W
R3036	401 012 6903	CARBON 10K JA 1/4W
R3045	401 020 1907	CARBON 4.7K JA 1/4W
R3061	401 020 2805	CARBON 47K JA 1/4W
R3062	401 018 4804	CARBON 33K JA 1/4W
R3101	401 012 8006	CARBON 100K JA 1/4W
R3102	401 012 8006	CARBON 100K JA 1/4W
R3103	401 012 8006	CARBON 100K JA 1/4W
R3104	401 012 8006	CARBON 100K JA 1/4W
R3201	401 012 5609	CARBON 1K JA 1/4W
R3202	401 014 4006	CARBON 1.5K JA 1/4W
R3203	401 022 3008	CARBON 6.8K JA 1/4W
R3204	401 016 3700	CARBON 2.2K JA 1/4W
R3205	401 012 5609	CARBON 1K JA 1/4W
R3206	401 012 4404	CARBON 100 JA 1/4W
R3207	401 012 6903	CARBON 10K JA 1/4W
R3208	401 016 2505	CARBON 220 JA 1/4W
R3209	401 012 8006	CARBON 100K JA 1/4W
R3210	401 022 3008	CARBON 6.8K JA 1/4W
R3211	401 016 4707	CARBON 22K JA 1/4W
R3212	401 019 7705	CARBON 4.3K JA 1/4W
R3213	401 012 5609	CARBON 1K JA 1/4W
R3501	401 012 8006	CARBON 100K JA 1/4W
R3502	401 012 8006	CARBON 100K JA 1/4W
R3503	401 018 5702	CARBON 330K JA 1/4W
R3504	401 014 6000	CARBON 150K JA 1/4W
R3505	401 014 5102	CARBON 15K JA 1/4W
R3506	401 016 5704	CARBON 220K JA 1/4W
R3507	401 014 6000	CARBON 150K JA 1/4W
R3508	401 017 2702	CARBON 27K JA 1/4W
R3516	401 012 6903	CARBON 10K JA 1/4W
R3517	401 020 2805	CARBON 47K JA 1/4W
R3518	401 020 2805	CARBON 47K JA 1/4W
R3520	401 018 5702	CARBON 330K JA 1/4W
R3521	401 012 6903	CARBON 10K JA 1/4W
R3525	401 012 5609	CARBON 1K JA 1/4W
R3526	401 016 3700	CARBON 2.2K JA 1/4W
R3527	401 012 5609	CARBON 1K JA 1/4W
R3528	401 020 7800	CARBON 510 JA 1/4W
R3529	401 020 7800	CARBON 510 JA 1/4W
R3533	401 014 4006	CARBON 1.5K JA 1/4W (EXCEPT VHR-330SP)
R3537	401 023 2703	CARBON 8.2K JA 1/4W
R3546	401 020 1907	CARBON 4.7K JA 1/4W
R3547	401 014 5102	CARBON 15K JA 1/4W
R3549	401 012 6903	CARBON 10K JA 1/4W
R3550	401 012 6903	CARBON 10K JA 1/4W
R3556	401 012 6903	CARBON 10K JA 1/4W
R3557	401 018 5702	CARBON 330K JA 1/4W
R3558	401 020 0702	CARBON 470 JA 1/4W
R3560	401 012 5609	CARBON 1K JA 1/4W
R5001 ⚠	401 001 8000	SOLID 2.7M MA 1/2W
R5003	401 069 4402	OXIDE-MT 68K JA 2W
R5005	401 090 0404	CARBON 680K JA 1/2W

LOCATION	PARTS NO.	DESCRIPTION
R5006	401 090 0404	CARBON 680K JA 1/2W
R5009	401 012 3308	CARBON 10 JA 1/4W
R5010	401 057 5107	OXIDE-MT 0.47 JA 1W
R5105	401 107 5200	MT-FILM 560 FD 1/4W
R5106	401 107 5309	MT-FILM 620 FD 1/4W
R5107	401 019 7200	CARBON 430 JA 1/4W
R5108	401 012 5609	CARBON 1K JA 1/4W
R5109	401 021 8905	CARBON 6.2K JA 1/4W
R5110	401 016 3700	CARBON 2.2K JA 1/4W
R5111	401 012 5609	CARBON 1K JA 1/4W
R5112	401 013 6308	CARBON 12K JA 1/4W
R5113	401 016 7401	CARBON 240 JA 1/4W
R5114	401 016 7401	CARBON 240 JA 1/4W
R5115	401 106 9704	MT-FILM 82 FD 1/4W
R5117	401 016 7401	CARBON 240 JA 1/4W
R5118	401 016 7401	CARBON 240 JA 1/4W
R5120 ⚠	402 068 0808	FUSIBLE RES 3.9 JA 1/4W
R6001	401 018 2701	CARBON 330 JA 1/4W
R6002	401 019 0904	CARBON 390 JA 1/4W
R6003	401 012 9201	CARBON 1M JA 1/4W
R6004	401 019 3905	CARBON 390K JA 1/4W (VHR-335E ONLY)
OR	401 012 9201	CARBON 1M JA 1/4W (EXCEPT VHR-335E)
R6005	401 020 3802	CARBON 470K JA 1/4W (VHR-335E ONLY)
OR	401 021 9902	CARBON 620K JA 1/4W (EXCEPT VHR-335E)
R6006	401 019 3905	CARBON 390K JA 1/4W
R6007	401 017 3709	CARBON 270K JA 1/4W (VHR-335E ONLY)
OR	401 021 4907	CARBON 560K JA 1/4W (EXCEPT VHR-335E)
R6008	401 012 5609	CARBON 1K JA 1/4W
R6010	401 012 8006	CARBON 100K JA 1/4W
R6011	401 012 8006	CARBON 100K JA 1/4W
R6014	401 015 9406	CARBON 2K JA 1/4W (VHR-330SP ONLY)
R6611	401 013 9408	CARBON 1.3K JA 1/4W
R6612	401 015 2605	CARBON 1.8K JA 1/4W
R6613	401 021 1807	CARBON 560 JA 1/4W
R6621	401 021 2903	CARBON 5.6K JA 1/4W
R6622	401 012 5609	CARBON 1K JA 1/4W
R6623	401 023 1607	CARBON 820 JA 1/4W
R6624	401 015 2605	CARBON 1.8K JA 1/4W
R6901	401 012 5609	CARBON 1K JA 1/4W
R6902	401 018 2701	CARBON 330 JA 1/4W
R6903	401 021 8103	CARBON 620 JA 1/4W
R6904	401 012 6903	CARBON 10K JA 1/4W
R6905	401 018 5702	CARBON 330K JA 1/4W
R6906	401 012 6903	CARBON 10K JA 1/4W
R6907	401 018 3708	CARBON 3.3K JA 1/4W
R6908	401 023 0600	CARBON 82 JA 1/4W
R6909	401 012 5609	CARBON 1K JA 1/4W
R6910	401 020 7800	CARBON 510 JA 1/4W
R6911	401 021 2903	CARBON 5.6K JA 1/4W
R6912	401 019 1802	CARBON 3.9K JA 1/4W
R6921	401 019 1802	CARBON 3.9K JA 1/4W (EXCEPT VHR-335E)
R6923	401 012 6903	CARBON 10K JA 1/4W
R6924	401 012 6903	CARBON 10K JA 1/4W
R6925	401 015 3701	CARBON 18K JA 1/4W
R6926	401 014 5102	CARBON 15K JA 1/4W
R6927	401 013 6308	CARBON 12K JA 1/4W
R6928	401 012 4404	CARBON 100 JA 1/4W
R6929	401 018 4804	CARBON 33K JA 1/4W

LOCATION	PARTS NO.	DESCRIPTION
(SWITCHES)		
S3101	645 000 3363	SWITCH,PUSH,REW
OR	613 139 4308	SW,PUSH,REW
S3102	645 000 3363	SWITCH,PUSH,PLAY
OR	613 139 4308	SW,PUSH,PLAY
S3103	645 000 3363	SWITCH,PUSH,REC
OR	613 139 4308	SW,PUSH,REC
S3104	645 000 3363	SWITCH,PUSH,EJECT
OR	613 139 4308	SW,PUSH,EJECT
S3105	645 000 3363	SWITCH,PUSH,FF
OR	613 139 4308	SW,PUSH,FF
S3106	645 000 3363	SWITCH,PUSH,STOP
OR	613 139 4308	SW,PUSH,STOP
S3107	645 000 3363	SWITCH,PUSH,PAUSE/STILL
OR	613 139 4308	SW,PUSH,PAUSE/STILL
S3108	645 000 3363	SWITCH,PUSH,POWER
OR	613 139 4308	SW,PUSH,POWER
S3117	645 000 3363	SWITCH,PUSH,CH+
OR	613 139 4308	SW,PUSH,CH+
S3118	645 000 3363	SWITCH,PUSH,CH-
OR	613 139 4308	SW,PUSH,CH-
(FUSE)		
F5001 ⚠	423 022 6506	FUSE 250V 2.5A
(PROTECTOR)		
PR511 ⚠	613 138 8871	CIRCUIT PROTECTOR
(CONNECTORS)		
CN161	613 111 5712	SOCKET,21P(EXCEPT VHR-330SP)
OR	645 002 4528	SOCKET,RGB 21P(EXCEPT VHR-330SP)
CN501 ⚠	645 000 5411	SOCKET,INLET AC
(MISCELLANEOUSES)		
	613 136 4554	HOLDER,FUSE,F5001
	613 053 8055	FIXER

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COMPL PWB,VP-1		
COMPL.NO	613 144 7738	(EXCEPT VHR-330SP)
COMPL.NO	613 146 4988	(VHR-330SP)
(SEMICONDUCTORS)		
Q1801	405 015 9701	TR 2SC2814-F4-TB
OR	405 015 9909	TR 2SC2814-F5-TB
OR	405 035 6100	TR 2SC2413K-T96-Q
Q1851	405 015 9701	TR 2SC2814-F4-TB
OR	405 015 9909	TR 2SC2814-F5-TB
OR	405 035 6100	TR 2SC2413K-T96-Q
Q1852	405 015 9701	TR 2SC2814-F4-TB
OR	405 015 9909	TR 2SC2814-F5-TB
OR	405 035 6100	TR 2SC2413K-T96-Q
(INTEGRATED CIRCUIT)		
IC181	409 302 2802	IC LA7377A
(VARIABLE RESISTORS)		
VR182	613 117 1718	VR,SEMI 2.2KB
OR	613 002 0369	SEMI VR 2.2KXB
(INDUCTORS)		
L1801	613 014 0968	COIL,INDUCTOR 82UHK
OR	613 014 4485	HF CHOKE 82UHK
L1802	613 014 0951	COIL,INDUCTOR 68UHK
OR	613 014 4478	HF CHOKE 68UHK
L1851	613 014 0821	COIL,INDUCTOR 5.6UHK
OR	613 014 4348	HF CHOKE 5.6UHK

LOCATION	PARTS NO.	DESCRIPTION
L1852	613 014 0944	COIL,INDUCTOR 56UHK
OR	613 014 4461	HF CHOKE 56UHK
L1853	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
L1854	613 014 0876	COIL,INDUCTOR 15UHK
OR	613 014 4393	HF CHOKE 15UHK
(CAPACITORS)		
C1801	403 154 3307	OS-SOLID 4.7U M 10V
C1804	403 069 5601	CERAMIC 0.01U K 50V
C1805	403 193 8509	ELECT 0.33U M 50V
C1807	403 026 7600	CERAMIC 470P J 50V
C1808	403 034 6800	CERAMIC 91P J 50V
C1809	403 069 5601	CERAMIC 0.01U K 50V
C1810	403 069 5601	CERAMIC 0.01U K 50V
C1811	403 069 5601	CERAMIC 0.01U K 50V
C1812	403 069 5601	CERAMIC 0.01U K 50V
C1813	403 073 1200	CERAMIC 0.033U K 50V
C1814	403 073 1200	CERAMIC 0.033U K 50V
C1851	403 069 5601	CERAMIC 0.01U K 50V
C1852	403 022 8304	CERAMIC 33P J 50V
C1853	403 022 8304	CERAMIC 33P J 50V
C1854	403 026 2902	CERAMIC 47P J 50V
C1855	403 028 4201	CERAMIC 56P J 50V
C1861	403 069 5601	CERAMIC 0.01U K 50V
C1862	403 139 1007	ELECT 47U M 6.3V
(RESISTORS)		
R1801	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R1803	401 037 5608	MT-GLAZE 10K JA 1/10W
R1805	401 037 7909	MT-GLAZE 1.5K JA 1/10W
R1807	401 037 6704	MT-GLAZE 1.2K JA 1/10W (EXCEPT VHR-330SP)
OR	401 037 5400	MT-GLAZE 1K JA 1/10W (VHR-330SP ONLY)
R1808	401 038 1302	MT-GLAZE 2.4K JA 1/10W (EXCEPT VHR-330SP)
OR	401 037 9200	MT-GLAZE 1.8K JA 1/10W (VHR-330SP ONLY)
R1810	401 037 5400	MT-GLAZE 1K JA 1/10W
R1811	401 038 7205	MT-GLAZE 5.1K JA 1/10W (EXCEPT VHR-330SP)
OR	401 038 5904	MT-GLAZE 4.3K JA 1/10W (VHR-330SP ONLY)
R1813	401 037 5400	MT-GLAZE 1K JA 1/10W
R1814	401 038 0800	MT-GLAZE 22K JA 1/10W
R1815	401 038 7700	MT-GLAZE 5.6K JA 1/10W
R1816	401 037 6704	MT-GLAZE 1.2K JA 1/10W
R1851	401 037 5400	MT-GLAZE 1K JA 1/10W
R1852	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1853	401 038 0701	MT-GLAZE 2.2K JA 1/10W
R1854	401 038 5003	MT-GLAZE 390 JA 1/10W
R1855	401 038 5003	MT-GLAZE 390 JA 1/10W
R1856	401 038 9605	MT-GLAZE 750 JA 1/10W
R1857	401 039 0304	MT-GLAZE 820 JA 1/10W
R1858	401 039 0304	MT-GLAZE 820 JA 1/10W
R1859	401 038 7601	MT-GLAZE 560 JA 1/10W
R1860	401 038 2002	MT-GLAZE 270 JA 1/10W
(JUMPERS)		
J1863	401 037 5004	MT-GLAZE 0.000 ZA 1/10W
J1886	401 037 5004	MT-GLAZE 0.000 ZA 1/10W

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COMPL PWB,TM-1

COMPL.NO 613 144 4461

LOCATION	PARTS NO.	DESCRIPTION
(REMOTE RECEIVERS)		
RR711	613 129 0938	IR RECEIVER PACK UNIT
OR	613 134 9087	IR RECEIVER PACK UNIT
(DISPLAYS)		
A7101	613 140 4007	FLUORESCENT TUBE
OR	613 140 4014	FLUORESCENT TUBE
(MISCELLANEOUS)		
	613 139 2267	HOLDER FL

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COMPL PWB,TB-1

COMPL.NO 613 145 8413 (VHR-330SP)

(SEMICONDUCTORS)		
Q8901	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q8902	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
Q8906	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q8907	405 018 2501	TR 2SC3399-AC
OR	405 000 6104	TR DTC144ES-DCTP
Q8908	405 004 4007	TR 2SA608-E-SPA-AC
OR	405 004 4601	TR 2SA608-F-SPA-AC
OR	405 006 1707	TR 2SA933S-TP-Q
OR	405 006 1806	TR 2SA933S-T93-R
OR	405 093 0508	TR KSA1175-Y
(INTEGRATED CIRCUITS)		
IC881	409 051 2900	IC TC4053BF
IC882	409 051 2900	IC TC4053BF
IC891	409 258 5209	IC BA7630S
(DIODES)		
D8601	407 070 7104	ZENER DIODE GZS5.6X-BT
OR	407 099 5303	ZENER DIODE MTZJ5.6B-T-77
D8602	407 070 7104	ZENER DIODE GZS5.6X-BT
OR	407 099 5303	ZENER DIODE MTZJ5.6B-T-77
D8603	407 099 7000	ZENER DIODE MTZJ15B-T-77
D8901	407 070 7104	ZENER DIODE GZS5.6X-BT
OR	407 099 5303	ZENER DIODE MTZJ5.6B-T-77
D8902	407 070 7104	ZENER DIODE GZS5.6X-BT
OR	407 099 5303	ZENER DIODE MTZJ5.6B-T-77
D8903	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D8904	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D8905	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D8906	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
D8910	407 007 9904	DIODE GMA01-BT
OR	407 012 4406	DIODE 1SS133-T-77
(CAPACITORS)		
C8551	403 075 0706	CERAMIC 6800P K 50V
C8552	403 069 1702	CERAMIC 1000P K 50V
C8554	403 069 1702	CERAMIC 1000P K 50V
C8821	403 163 8409	ELECT 47U M 16V
C8829	403 191 8600	ELECT 4.7U M 25V

LOCATION	PARTS NO.	DESCRIPTION	
C8901	403 158 5604	NP-ELECT	0.47U M 50V
C8902	403 069 9500	CERAMIC	0.01U Z 50V
C8903	403 163 7907	ELECT	47U M 6.3V
C8904	403 158 5604	NP-ELECT	0.47U M 50V
C8906	403 248 1400	ELECT	1U M 50V
C8907	403 248 1400	ELECT	1U M 50V
C8908	403 223 9308	ELECT	470U M 6.3V
C8909	403 163 8409	ELECT	47U M 16V
C8910	403 069 9500	CERAMIC	0.01U Z 50V
(RESISTORS)			
R8507	401 038 2101	MT-GLAZE	2.7K JA 1/10W
R8508	401 038 2101	MT-GLAZE	2.7K JA 1/10W
R8547	401 038 2101	MT-GLAZE	2.7K JA 1/10W
R8548	401 038 2101	MT-GLAZE	2.7K JA 1/10W
R8553	401 038 7601	MT-GLAZE	560 JA 1/10W
R8556	401 038 7601	MT-GLAZE	560 JA 1/10W
R8601	401 038 9506	MT-GLAZE	75 JA 1/10W
R8602	401 038 9506	MT-GLAZE	75 JA 1/10W
R8603	401 037 5400	MT-GLAZE	1K JA 1/10W
R8604	401 037 5400	MT-GLAZE	1K JA 1/10W
R8620	401 037 7404	MT-GLAZE	13K JA 1/10W
R8621	401 039 1004	MT-GLAZE	9.1K JA 1/10W
R8803	401 039 1004	MT-GLAZE	9.1K JA 1/10W
R8821	401 038 6406	MT-GLAZE	4.7K JA 1/10W
R8822	401 038 6406	MT-GLAZE	4.7K JA 1/10W
R8823	401 038 6406	MT-GLAZE	4.7K JA 1/10W
R8824	401 038 6406	MT-GLAZE	4.7K JA 1/10W
R8825	401 037 5400	MT-GLAZE	1K JA 1/10W
R8826	401 037 5400	MT-GLAZE	1K JA 1/10W
R8827	401 037 5400	MT-GLAZE	1K JA 1/10W
R8828	401 037 5400	MT-GLAZE	1K JA 1/10W
R8829	401 037 5608	MT-GLAZE	10K JA 1/10W
R8830	401 038 2101	MT-GLAZE	2.7K JA 1/10W
R8851	401 038 7601	MT-GLAZE	560 JA 1/10W
R8852	401 039 0304	MT-GLAZE	820 JA 1/10W
R8853	401 037 5400	MT-GLAZE	1K JA 1/10W
R8901	401 037 5202	MT-GLAZE	100 JA 1/10W
R8902	401 037 5202	MT-GLAZE	100 JA 1/10W
R8910	401 023 1607	CARBON	820 JA 1/4W
R8911	401 023 1607	CARBON	820 JA 1/4W
R8912	401 038 3405	MT-GLAZE	33 JA 1/10W
R8913	401 038 4907	MT-GLAZE	39 JA 1/10W
R8914	401 023 1607	CARBON	820 JA 1/4W
R8915	401 023 1607	CARBON	820 JA 1/4W
R8916	401 038 3405	MT-GLAZE	33 JA 1/10W
R8917	401 038 4907	MT-GLAZE	39 JA 1/10W
R8918	401 038 6505	MT-GLAZE	47K JA 1/10W
R8919	401 038 0701	MT-GLAZE	2.2K JA 1/10W
R8920	401 038 6406	MT-GLAZE	4.7K JA 1/10W
R8921	401 037 5608	MT-GLAZE	10K JA 1/10W
(CONNECTORS)			
CN871	613 105 6633	SOCKET,21P	
CN872	613 105 6640	SOCKET,21P	

****

COMPL PCB,MC-1

COMPL.NO 613 120 9060

(DIODES)

D8001	407 094 1300	PHOTO COUPLE SPI-315-04-C
OR	407 043 0101	PHOTO DIODE ON2170-R

(RESISTORS)

R8001	401 026 0607	CARBON	270 JA 1/6W
OR	401 017 0708	CARBON	270 JA 1/4W
R8002	401 024 6700	CARBON	100 JA 1/6W
R8002	401 012 4404	CARBON	100 JA 1/4W

(SWITCH)

S8001	613 022 4545	SPECIAL SWITCH

****

FLEXIBLE FLAT CABLES

613 144 4577	FLEXIBLE FLAT CABLES CN303-CN811
613 145 8475	FLEXIBLE FLAT CABLES CN101-CN181

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SANYO

SANYO Electric Co., Ltd.
Osaka, Japan

VHR-335E
VHR-335IR
VHR-330SP

BLOCK DIAGRAMS,CIRCUIT DIAGRAMS & PRINTED CIRCUIT BOARDS

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NOTES:

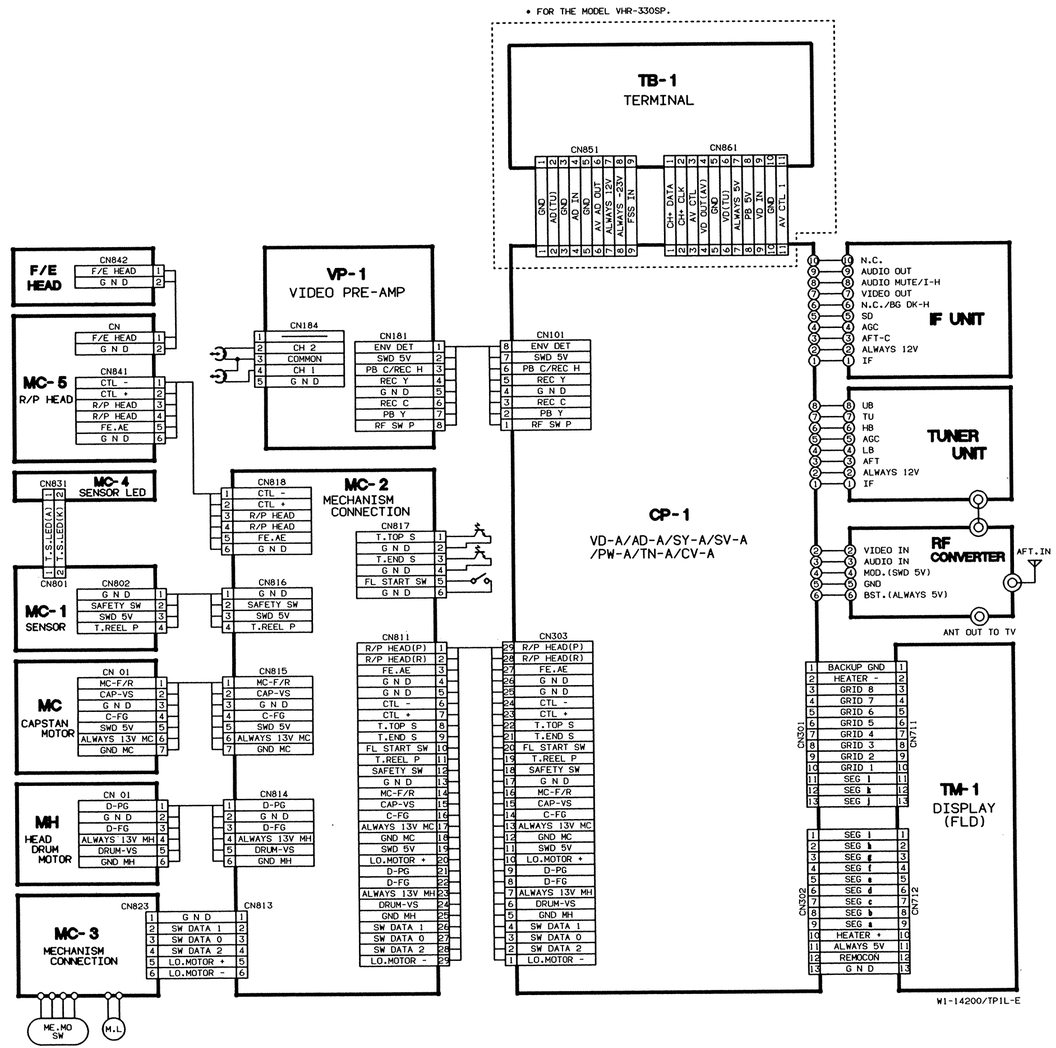
1. All resistance values in "OHMS" unless otherwise noted. (K=1,000 M=1,000,000)
2. All capacitance values in "μfd" unless otherwise noted. p=pico farad
3. All inductance values in "mH" unless otherwise noted. μ=micro henry

PRODUCT SAFETY NOTICE

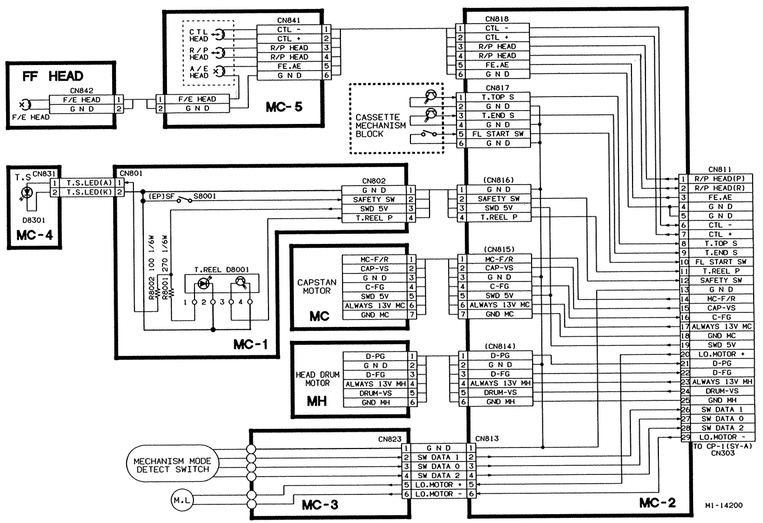
THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A SIMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST. DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

1.OVERALL WIRING, MECHANISM CONNECTION, & BLOCK DIAGRAMS

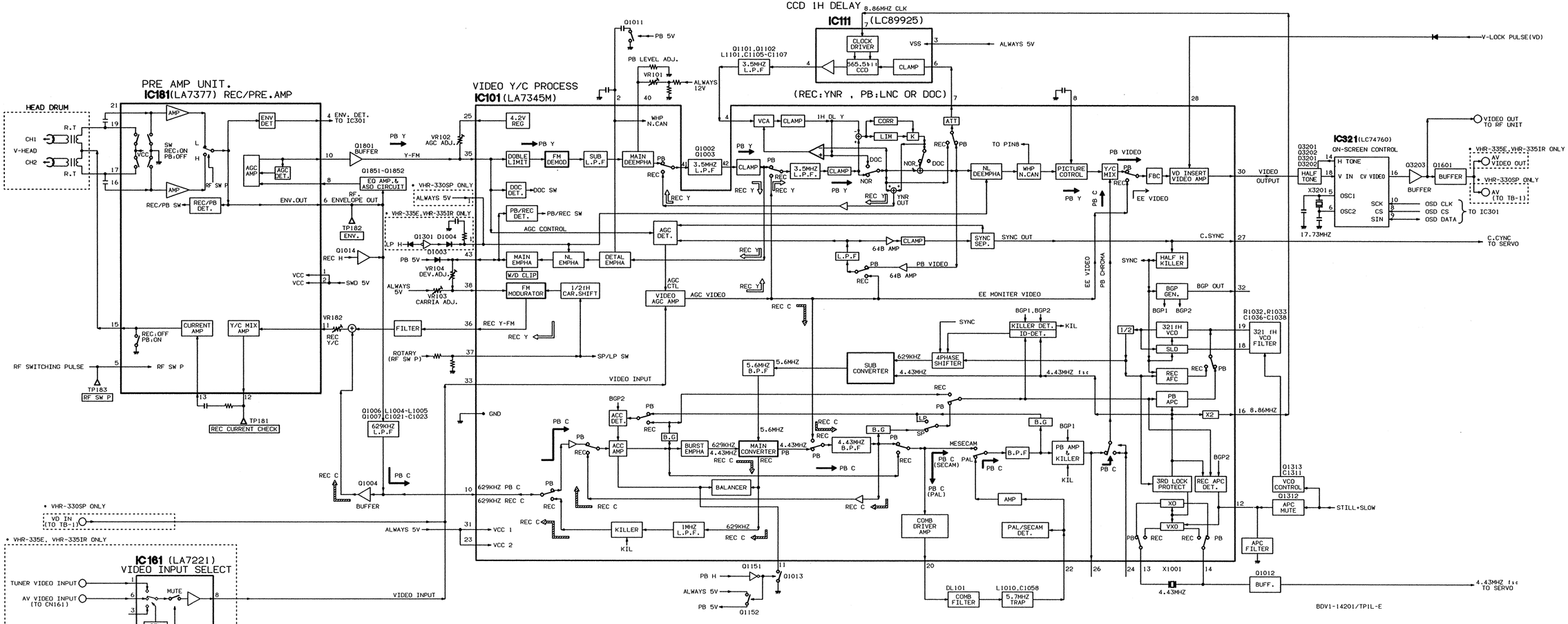
OVERALL WIRING



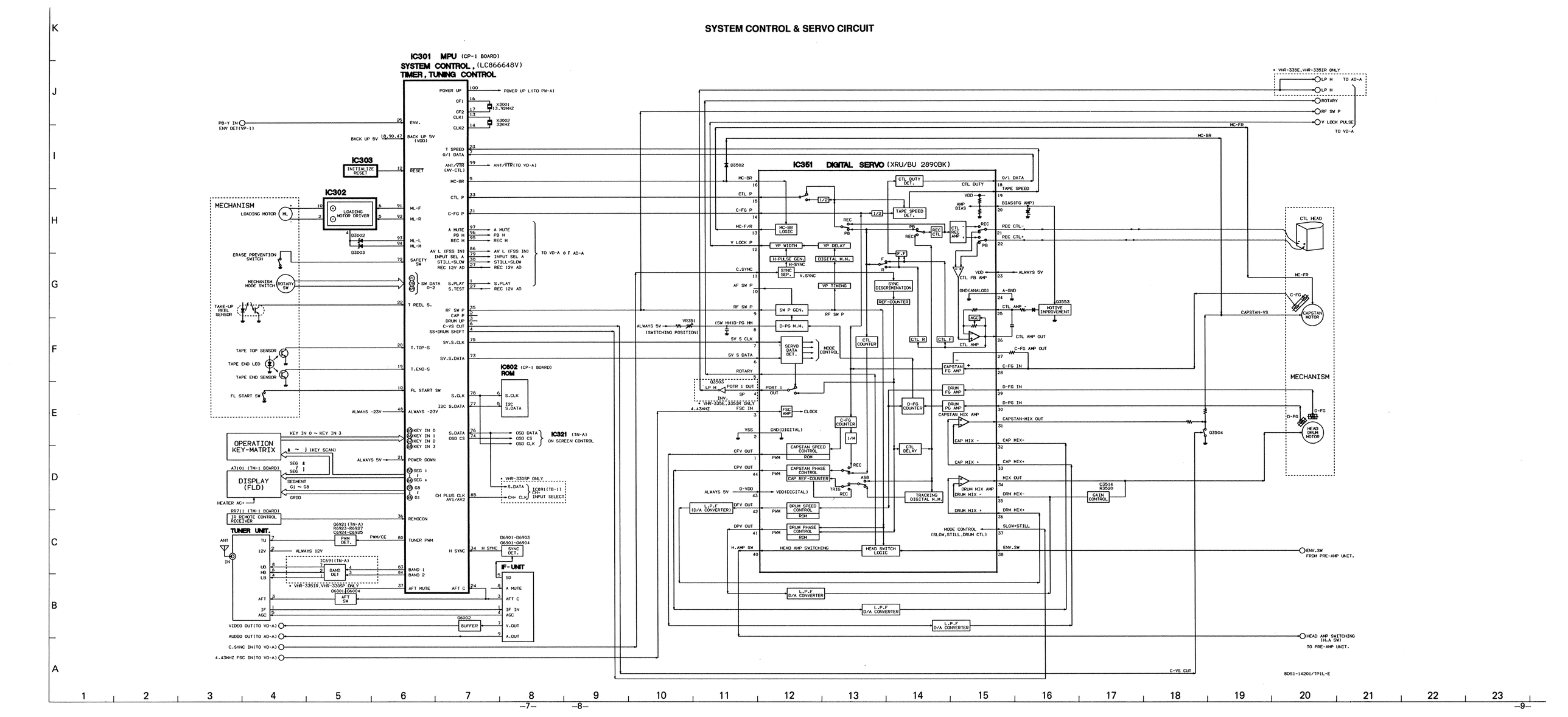
MECHANISM CONNECTION



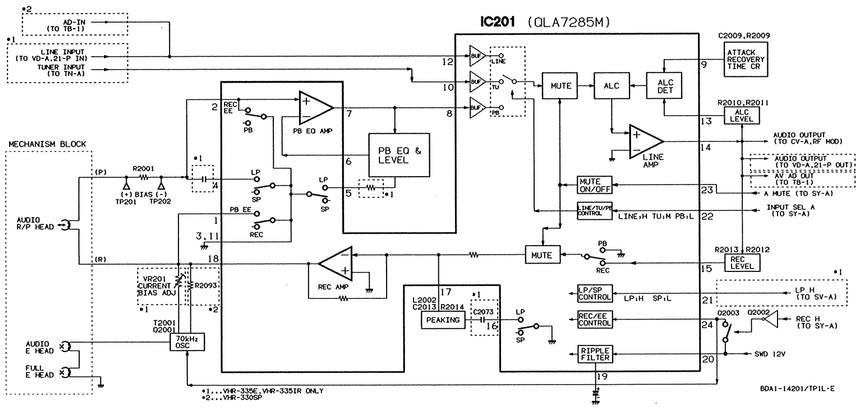
VIDEO CIRCUIT



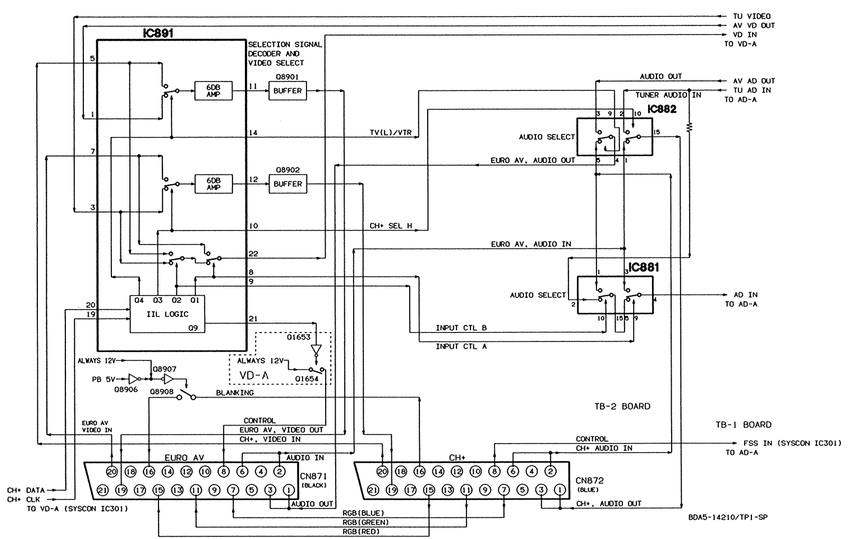
SYSTEM CONTROL & SERVO CIRCUIT



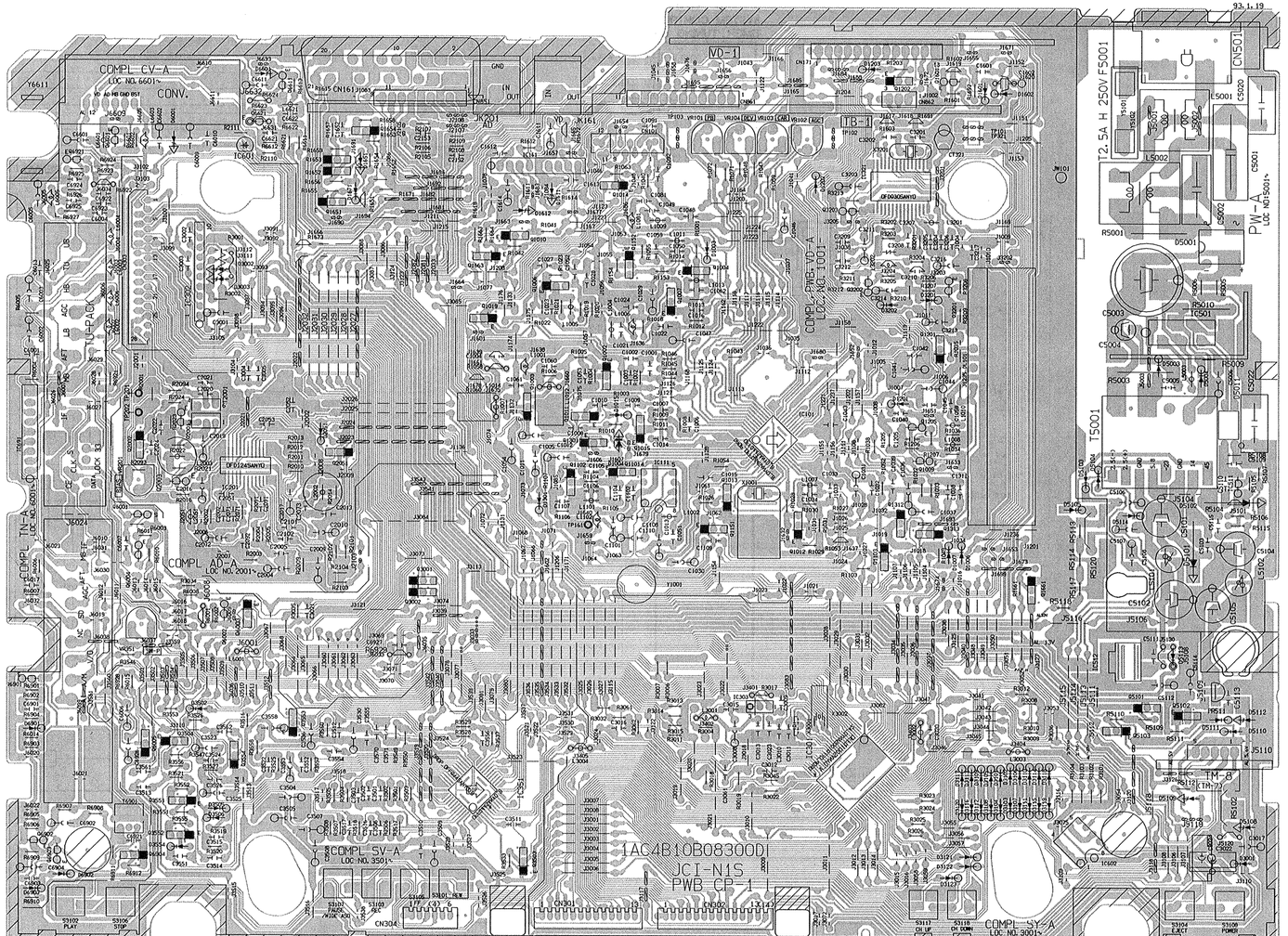
AUDIO CIRCUIT



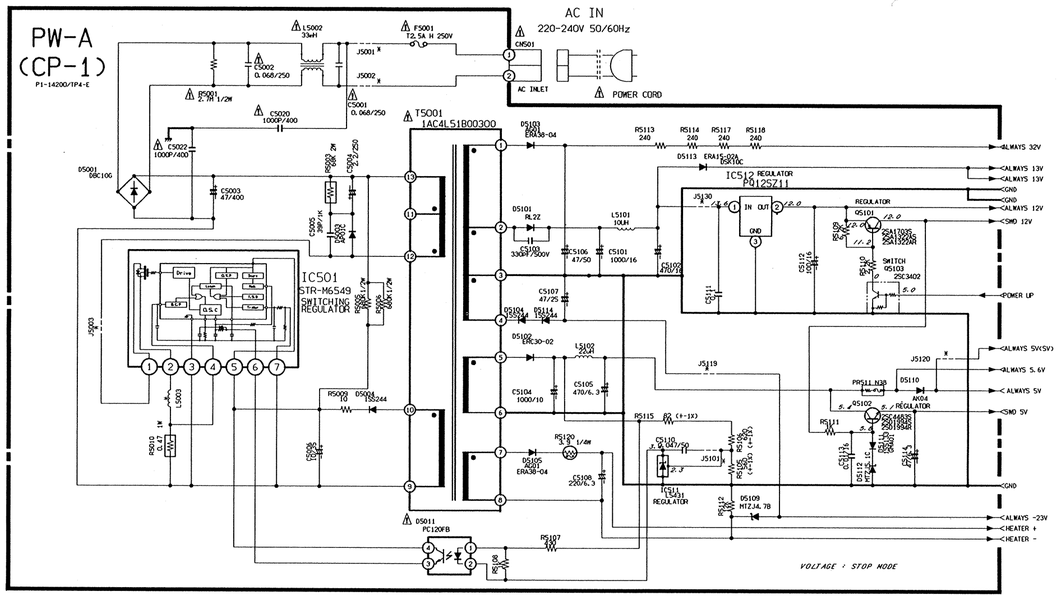
INPUT OUTPUT SELECTOR CIRCUIT(FOR THE MODEL VHR-330SP)



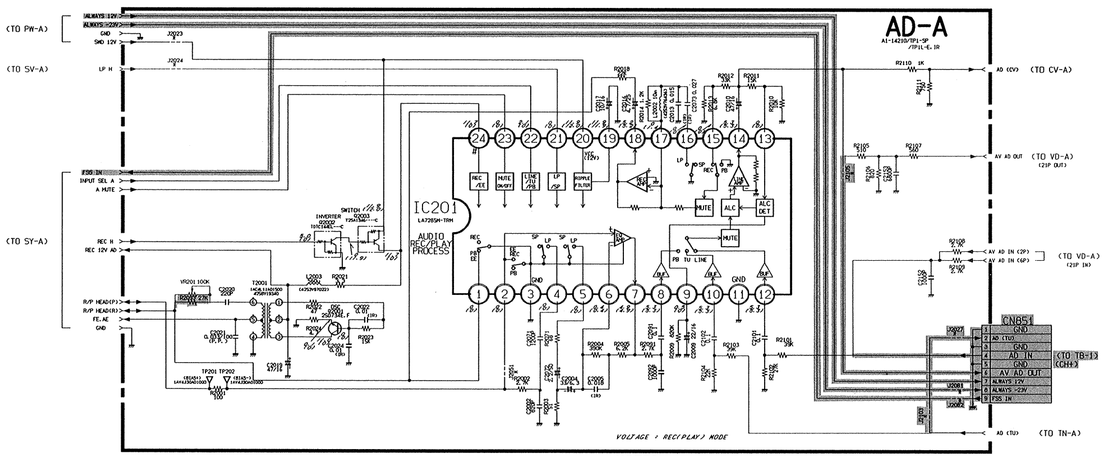
CP-1 P.W.B.



CP-1 BOARD (PW-A) POWER SUPPLY



CP-1 BOARD (AD-A) AUDIO



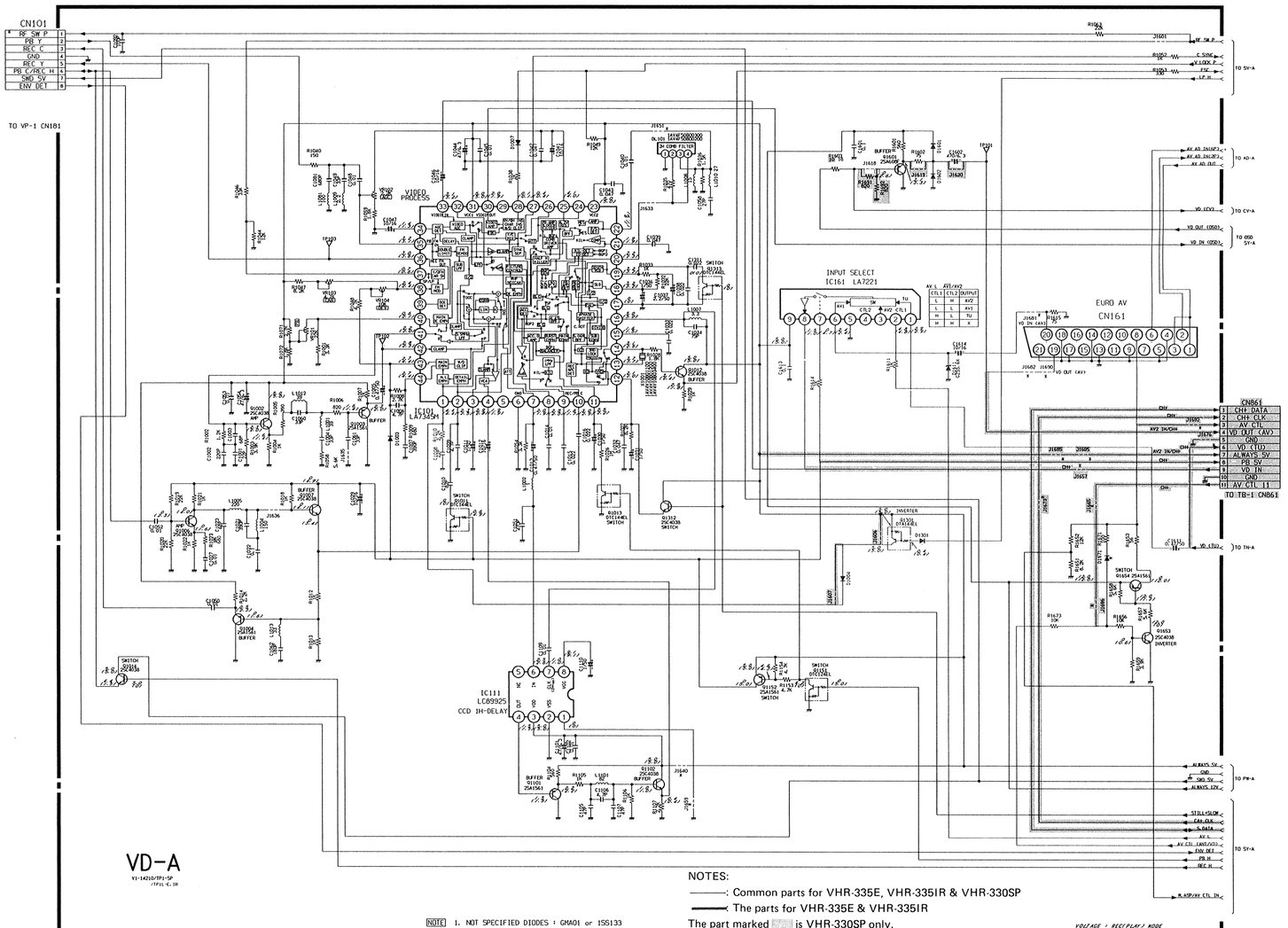
NOTES:

———: Common parts for VHR-335E, VHR-335IR & VHR-330SP

▬▬: The parts for VHR-335E & VHR-335IR

The part marked ▒▒ is VHR-330SP only.

CP-1 BOARD (VD-A) VIDEO

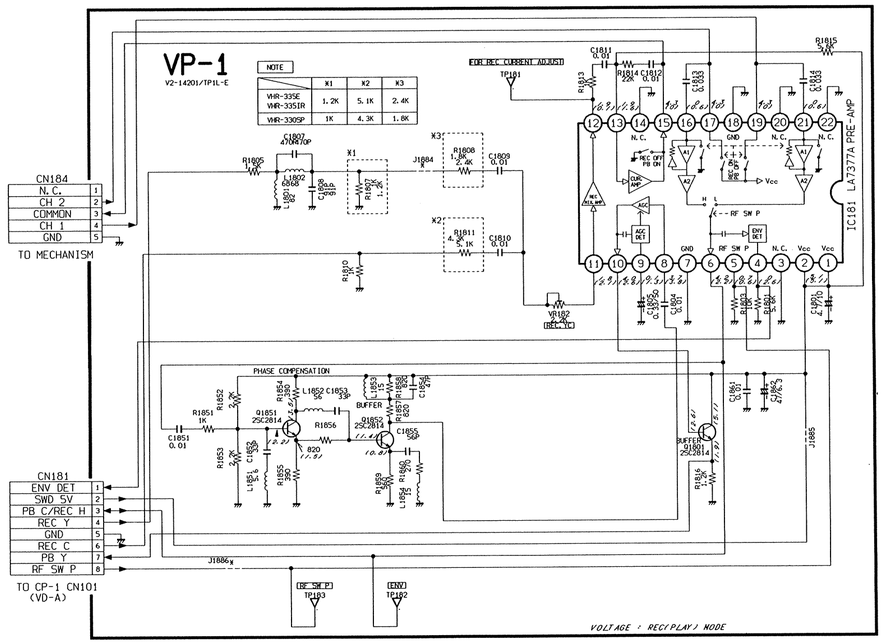


VIDEO CIRCUIT WAVEFORMS

WF-V-TP

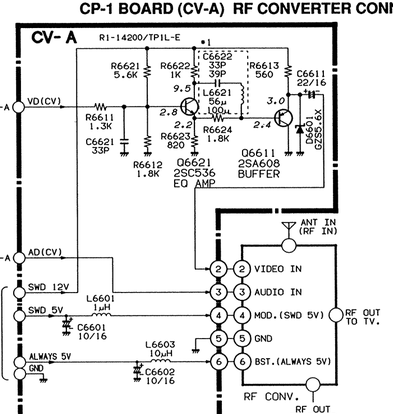
TEST LOCATION	WAVEFORM	MODE/LEVEL	TEST LOCATION	WAVEFORM	MODE/LEVEL
IC101, Pin 33 (VIDEO IN)		REC, EE 1 Vp-p	IC101 Pin 30 (VIDEO OUT)		PB 2.5 Vp-p
IC101 Pin 41		REC, EE 0.6 Vp-p	IC101 Pin 30 (VIDEO OUT)		REC, EE 2 Vp-p
IC101 Pin 42		REC, EE 0.5 Vp-p	IC101 (UPPER) Pin 30 (LOWER) Pin 28		STILL (UPPER) 2 Vp-p (LOWER) 5 Vp-p
IC101 Pin 43		REC, EE 1.2 Vp-p	IC101 Pin 10 (REC CHROMA OUT)		REC, EE 0.4 Vp-p
IC101 Pin 36 (REC FM OUT)		REC, EE 1.0 Vp-p	Q1006 Base (PB CHROMA)		PB 0.3 Vp-p
IC101 Pin 35 (PB FM IN)		PB 0.3 Vp-p	Q1007 Emitter (PB CHROMA)		PB 0.2 Vp-p
IC101 Pin 41		PB 0.5 Vp-p	IC101 Pin 10 (PB CHROMA IN)		PB 0.2 Vp-p
IC101 Pin 42		PB 0.5 Vp-p	IC101 Pin 20		PB 1.0 Vp-p
IC101 Pin 7/4		PB 0.3 Vp-p	IC101 Pin 26		PB 0.6 Vp-p

VP-1 BOARD VIDEO PRE-AMP



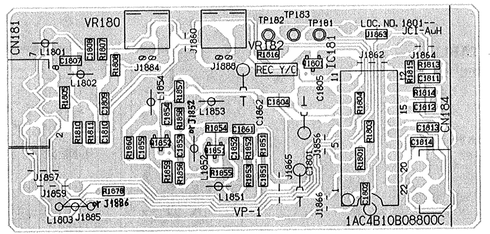
NOTE	K1	K2	K3
VHR-335E	1.2K	5.1K	2.4K
VHR-335IR			
VHR-330SP	1K	4.3K	1.8K

CP-1 BOARD (CV-A) RF CONVERTER CONNECTION



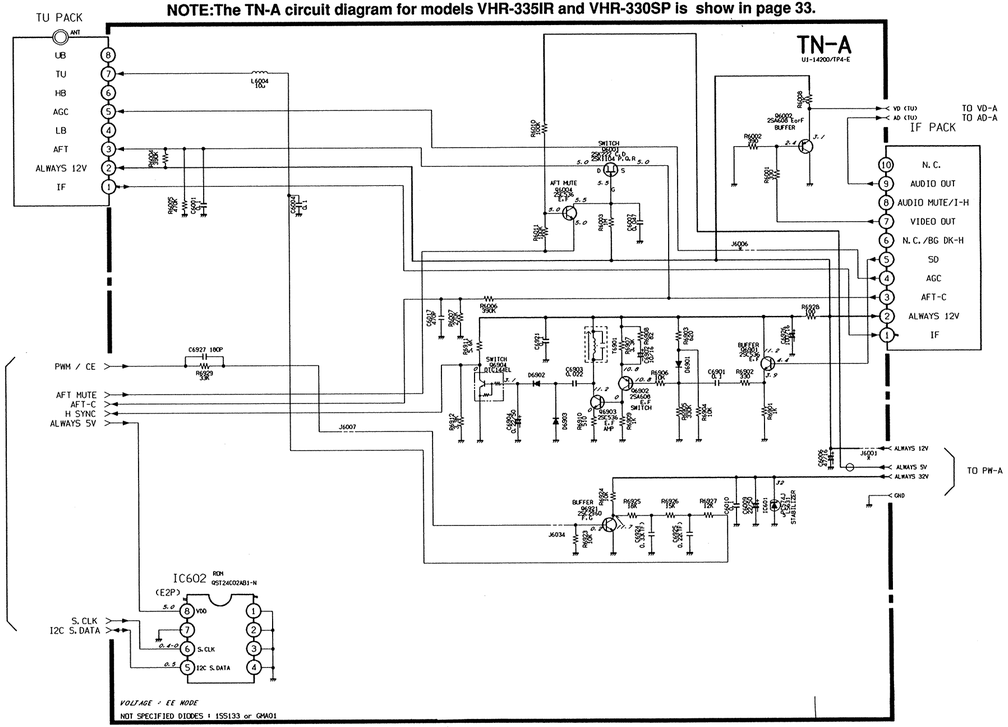
NOTE	•1	
	C6622	L6621
VHR-335E VHR-335IR	33P	56μ
VHR-330SP	39P	100μ

VP-1 P.W.B.



CP-1 BOARD (TN-A) TUNER IF CONNECTION(FOR THE MODEL VHR-335E)

NOTE:The TN-A circuit diagram for models VHR-335IR and VHR-330SP is show in page 33.



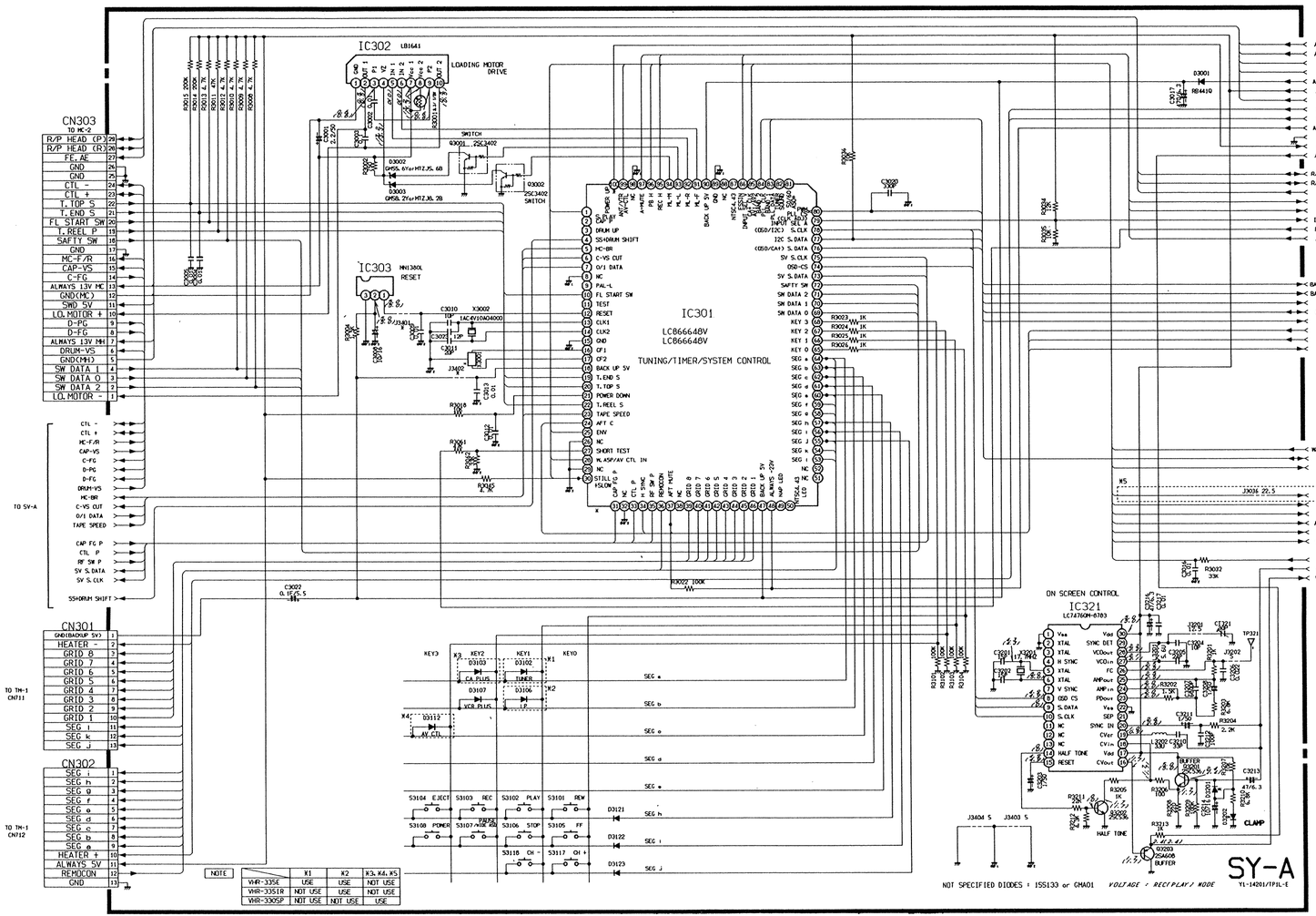
IC301 SYSTEM CONTROL, TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE

No.	Name	I/O	I/O Signal Function
1	S - PLAY	O	Signal for indicating CUE , REV , STILL and SLOW modes.
2	CAP P.	O	Gain down control for Head Motor Amplifier at SLOW mode.
3	DRUM UP	O	Head drum motor rotation speed up signal.
4	SS + DRUM SHIFT	O	Signal for indicating SLOW/STILL modes and alternation of drum motor control data. (3 value voltage)
5	MC - BR	O	Brake signal for capstan motor.
6	C - Vs CUT	O	Cut off for capstan motor control voltage in SLOW / STILL modes.
7	0 / 1 DATA	I	CTL pulse duty detection signal input. Used for VISS detection.
8	-	-	-
9	PAL L	O	PAL mode indication signal output.
10	FL- START SW	I	Switch input indicating start of cassette loading or discharge by cassette mechanism.
11	-	-	-
12	RESET	I	Initial reset terminal for this IC.
13	XT1	-	Clock OSC during power failures.
14	XT2	-	Frequency is 32.672kHz.
15	VSS	-	Ground terminal
16	CF1	-	IC clock OSC terminal.
17	CF2	-	Frequency is 13.92MHz.
18	VDD	-	IC power supply terminal.(5Vdc)
19	T. END S.	I	Sensor signal input for tape end detection.
20	T. TOP S.	I	Sensor signal input for tape beginning detection.
21	POWER DOWN	I	Power failure detection terminal.
22	T. REEL P.	I	Pulse input for detection of take-up reel table rotation.
23	TAPE SPEED	I	Input of result of tape speed discrimination by digital servo IC.
24	AFT- C	I	Tuner AFT s-curve signal input for tuner AFT control.
25	ENV.	I	Video head envelope detection signal input for ATR function.
26	-	-	-
27	SHORT TEST	I	REC mode indication signal input (REC 12V).
28	W. ASP/ AV CTL IN	I	AV source selection signal input from AV terminal.
29	-	-	-
30	STILL + SLOW	O	STILL or SLOW modes indication signal output.
31	C - FG P.	I	FG signal input of capstan motor.
32	-	-	-
33	CTL P.	I	CTL head recording / playback pulse signal input.
34	H SYNC	I	Sync. signal input for existing channel discrimination and TV system discrimination.
35	RF SW P.	I	Input of RF switching pulse created by head drum PG.
36	REMOCON	I	Remote control signal input.
37	AFT MUTE	O	"H" output during TU AFT mute. (V-syn model only)
38	-	-	-
39	G8	O	
40	G7	O	
41	G6	O	
42	G5	O	Display grid outputs (FLD).
43	G4	O	
44	G3	O	
45	G2	O	
46	G1	O	
47	VDD	-	IC power supply input.(5Vdc)
48	V LOAD	O	-30V input for FLD drive.
49	NAP LED	O	Signal for NAP indicator LED drive.
50	NTSC 4.43 LED	O	Signal for NTSC4.43 indicator LED drive.
51	-	-	-
52	-	-	-
53	SEG I	O	Display segment outputs (FLD).
54	SEG k	O	(Includes key-scan output)

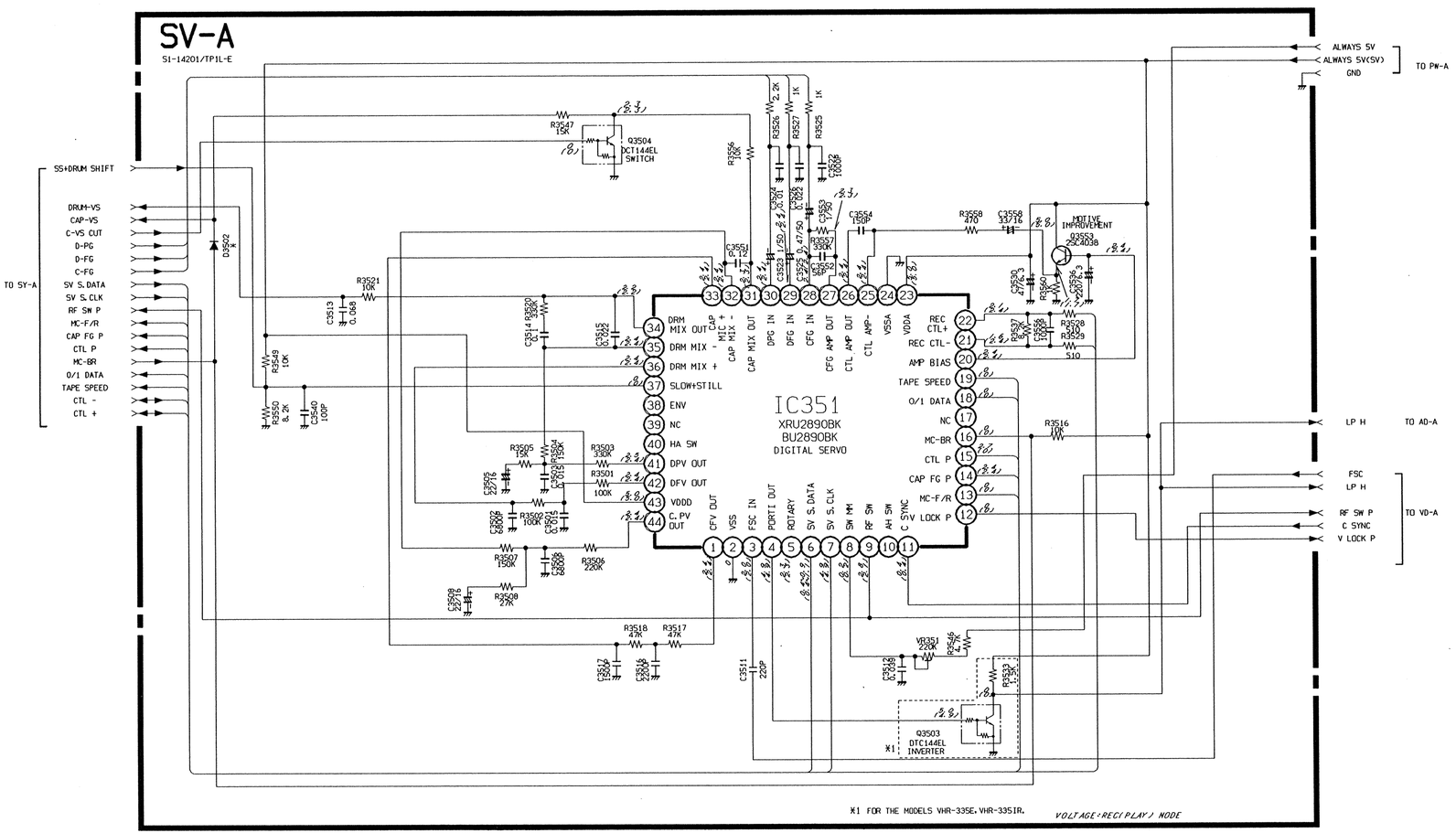
No.	Name	I/O	I/O Signal Function
55	SEG j	O	
56	SEG i	O	
57	SEG h	O	
58	SEG g	O	
59	SEG f	O	Display segment outputs (FLD).
60	SEG e	O	(Includes key-scan output)
61	SEG d	O	
62	SEG c	O	
63	SEG b	O	
64	SEG a	O	
65	KEY IN 0	I	
66	KEY IN 1	I	Operation key data inputs.
67	KEY IN 2	I	
68	KEY IN 3	I	
69	SW DATA 0	I	
70	SW DATA 1	I	3-bit data indicating operation position of mechanism.
71	SW DATA 2	I	
72	SAFETY SW	I	Terminal for accidental erasure prevention switch. No operation to recording mode while "LOW" is input.
73	SV S. DATA	O	Output 8-bit X 4 serial data giving operation mode and tracking data,etc., to digital servo IC.
74	OSD CS	O	Chip enable (access) signal output to OSD IC.
75	SV S. CLK	O	The clock pulse for digital servo IC.
76	S. DATA (OSD/CH+)	I/O	Terminal for communication of respective data with OSD IC and CH+ control IC.
77	I2C SDA	I/O	Data exchange with tuning memory IC and VPS IC.
78	S. CLK (OSD/I2C)	O	The clock pulse for OSD IC and tuning memory IC.
79	INPUT SEL A	O	Signal for selecting audio input source.
80	PLL CS	O	Chip enable signal output to tuner PLL tuning system IC. (F-syn model)
	PWM	O	Tuning voltage output (PWM signal). (V-syn model)
81	50 / 60	O	* LOW * output during NAP or NTSC4.43 modes. (60 field mode)
82	TUNER SOUND	O	TV system indication signal output (PAL I or DK).
83	BAND 1	O	Tuning band data(BAND 1 and 2 ; for V-syn model).
	PLL DATA	O	Data exchange with tuner PLL IC (for F-syn model).
84	BAND 2	O	BAND 1 and 2 ; (L,L)=VHF-LOW (L,H)=VHF-HIGH (H,L)=UHF (H,H)=SKIP. (for V-syn model)
	PLL CLK	O	The clock for PLL IC of tuner unit (for F-syn model).
85	CH+ CLK	O	The clock for CH+ input/output source selection IC.
	AV1 / AV2	O	Signal for selecting AV-input (video/audio) source.
86	INPUT SEL V	O	Signal for selecting video input source.
	FSS IN	I	CH+ mode control signal input (CH+ model).
87	NTSC 4.43	O	* H * output during NTSC 4.43 playback mode.
88		-	-
89	VSS	-	IC ground terminal.
90	VDD	-	IC power supply input.(5Vdc)
91	ML- F	O	Loading motor rotation direction (FWD) indication signal.
92	ML- R	O	Loading motor rotation direction (REV) indication signal.
93	ML- L	O	Loading motor rotation speed (low speed) indication signal.
94	ML- M	O	Loading motor rotation speed (medium speed) indication signal.
95	REC H	O	Signal for indicating recording mode.
96	PB H	O	Signal for indicating playback mode.
97	A MUTE	O	"H" output for disable audio output signal.
98	-	-	-
99	AV CTL	O	AV terminal (pin8 of 21pins AV socket) control signal output.
	ANT / VTR	O	Selection the RF source of ANTENNA or VTR.
100	POWER UP	O	"HIGH" output except when power is off. Indicating that power is ON.

TP4VF_UF

CP-1 BOARD (SY-A) SYSTEM CONTROL



CP-1 BOARD (SV-A) SERVO



SERVO CIRCUIT WAVEFORMS

TEST LOCATION	WAVEFORM & MODE/LEVEL	TEST LOCATION	WAVEFORM & MODE/LEVEL
Pin 40 (H.A.SWITCHING)	SLOW PB, 5.0V, 20msec 20msec	Pin 15 (CTL PULSE)	REC, 5.0V, 24msec 16msec
Pin 42 (PWM)	5.0V, 8.66KHz	Pin 15 (CTL PULSE)	PB, 850μsec, 5.0V, 40msec
Pin 41, 44, 1 (PWM)	5.0V, 69.27KHz	Pin 21 (CTL HEAD–)	REC, 3.6V, 1.4V, 24msec 16msec
Pin 3 (FSC INPUT)	0.3Vp-p, 4.43MHz	Pin 22 (CTL HEAD+)	REC, 1.4V, 3.6V, 24msec 16msec
Pin 5 (ROTARY)	PB, 5.0V, 20msec 20msec	Pin 26 (CTL AMP OUT)	PB, 2Vp-p, 40msec
Pin 8 (D-PG MM)	2msec, 2.5V, 7msec	Pin 28 (C-FG INPUT)	10mVp-p, 0.66msec
Pin 9 (RF SW PULSE)	5.0V, 20msec 20msec	Pin 29 (D-FG INPUT)	30mVp-p, 1.33msec
Pin 10 (AF SW PULSE)	PB, 5.0V, 20msec 20msec	Pin 30 (D-PG INPUT)	250mVp-p, 40msec
Pin 11 (COMPOSITE SYNC INPUT)	T=20msec, 4.2V	Pin 38 (ENV.SW INPUT)	SLOW PB, 4.0V, 20msec 20msec
Pin 14 (C-FG PULSE)	5.0V, 1513Hz		

WF-S-TP4

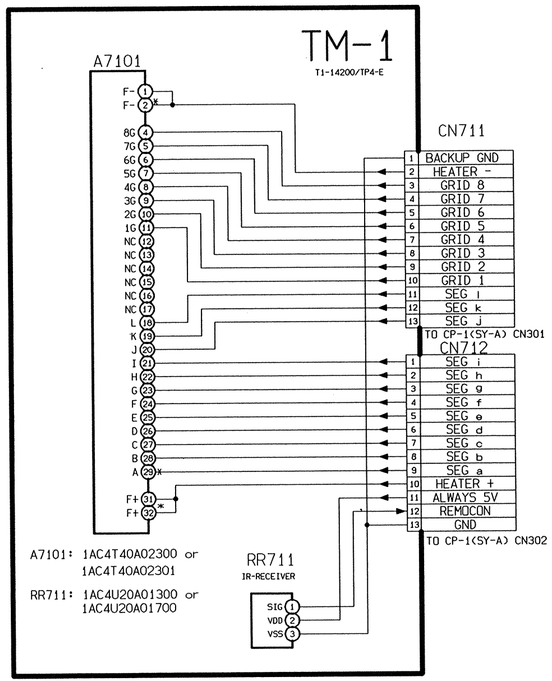
ON SCREEN (IC321) WAVEFORMS

(MODE: REC EE/ON SCREEN)

TEST LOCATION	WAVEFORM	LEVEL	TEST LOCATION	WAVEFORM	LEVEL
Pin 5 (17.7MHz X-TAL)		2Vp-p	Pin 19 (CV cr)		2Vp-p
Pin 6 (17.7MHz X-TAL)		3Vp-p			
Pin 14 (HALF TONE)		5Vp-p	Pin 20 (SYNC IN)		2Vp-p
Pin 16 (VIDEO OUT: WITH ON SCREEN)		2Vp-p			
Pin 14 (HALF TONE)		5Vp-p	Pin 23 (PD OUT)		4.5Vp-p
Pin 18 (VIDEO IN)		2Vp-p	Pin 16 (VIDEO OUT)		2Vp-p

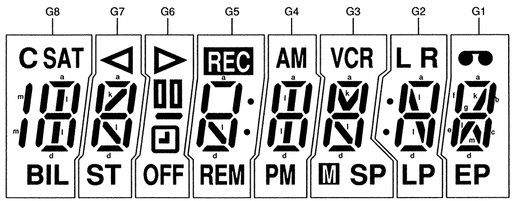
WF-UFO-TP4

TM-1 BOARD DISPLAY(FLD)



A7101 DISPLAY(FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE

GRID & SEGMENT ASSIGNMENT

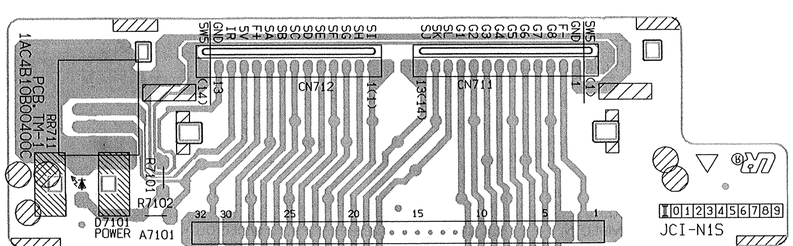


ANODE CONNECTION

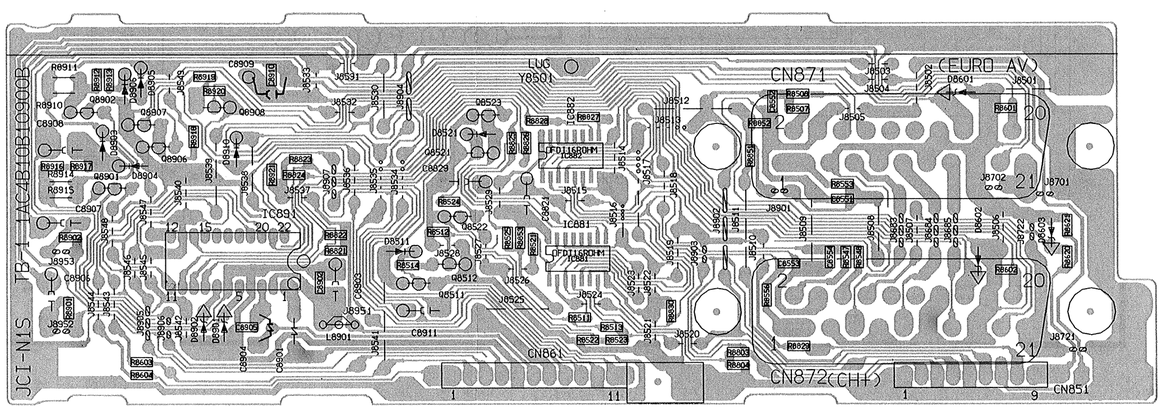
GRID / SEGMENT	G8	G7	G6	G5	G4	G3	G2	G1
a	C	◁	▷	REC	AM	VCR	L	
b	SAT	k	▯▯	—	—	k	R	k
c	a	a	▬	a	a	a	a	a
d	b	b	◪	b	b	b	b	b
e	c	c	—	c	c	c	c	c
f	d	d	—	d	d	d	d	d
g	e	e	—	e	e	e	e	e
h	f	f	—	f	f	f	f	f
i	g	g	—	g	g	g	g	g
j	l	l	—	l	l	l	l	l
k	m	—	—	:	—	M	:	m
l	BIL	ST	OFF	REM	PM	SP	LP	EP

GR-02300

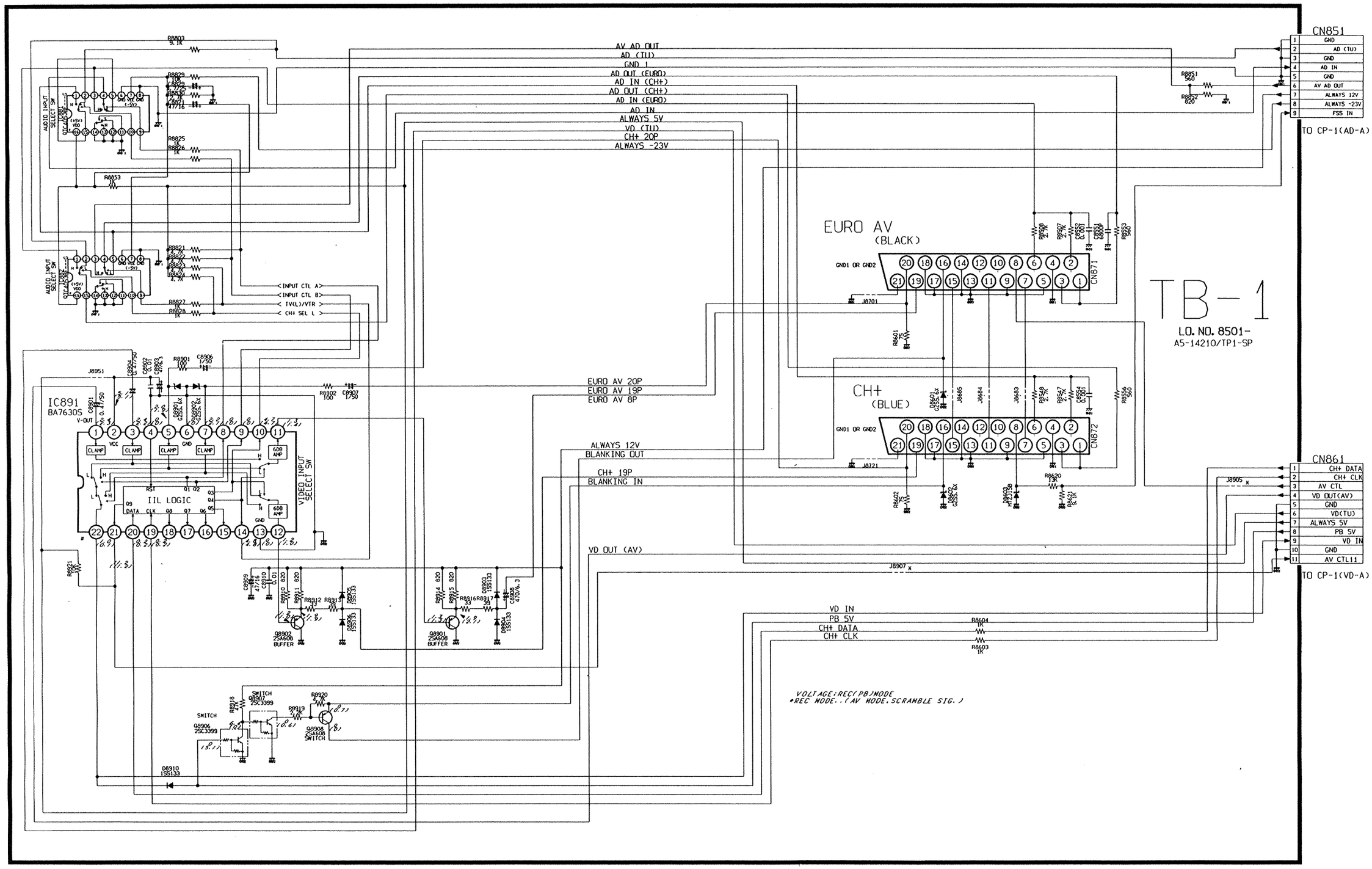
TM-1 P.W.B.



TB-1 P.W.B.(FOR THE MODEL VHR-330SP)



TB-1 BOARD TERMINAL INPUT/OUTPUT SELECTION(FOR THE MODEL VHR-330SP)



CP-1 BOARD (TN-A) TUNER IF CONNECTION(FOR THE MODELS VHR-335IR & VHR-330SP)